VOL. XLVII. No.4 APRIL 1962

MECCANO MAGAZINE

1/3

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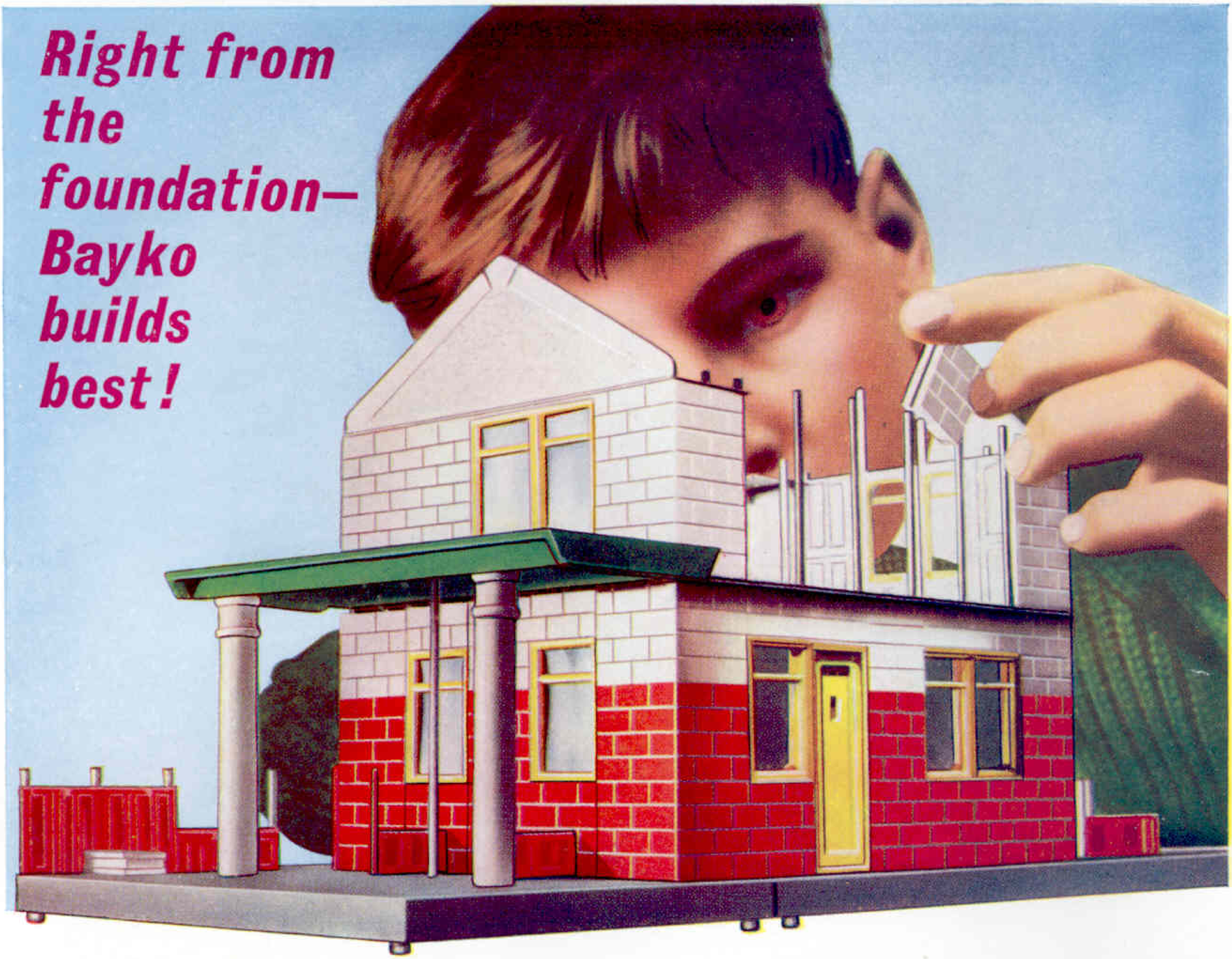

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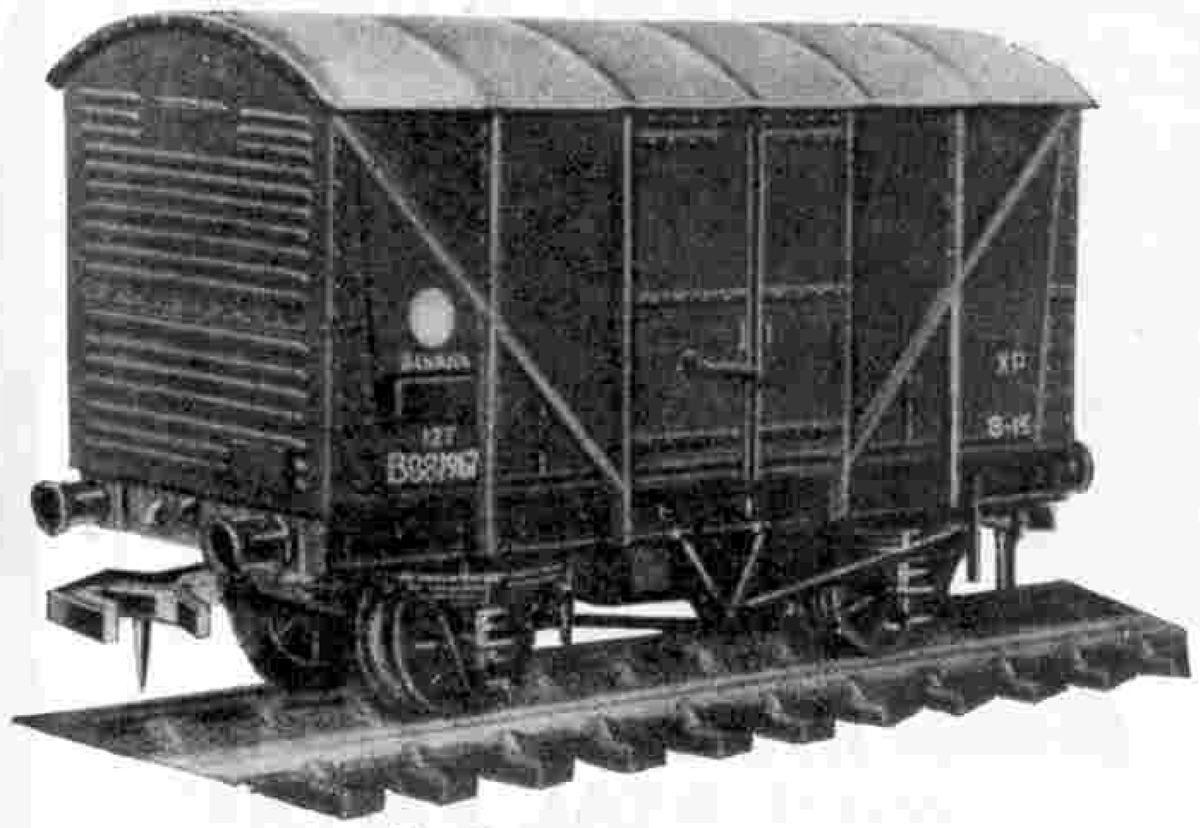

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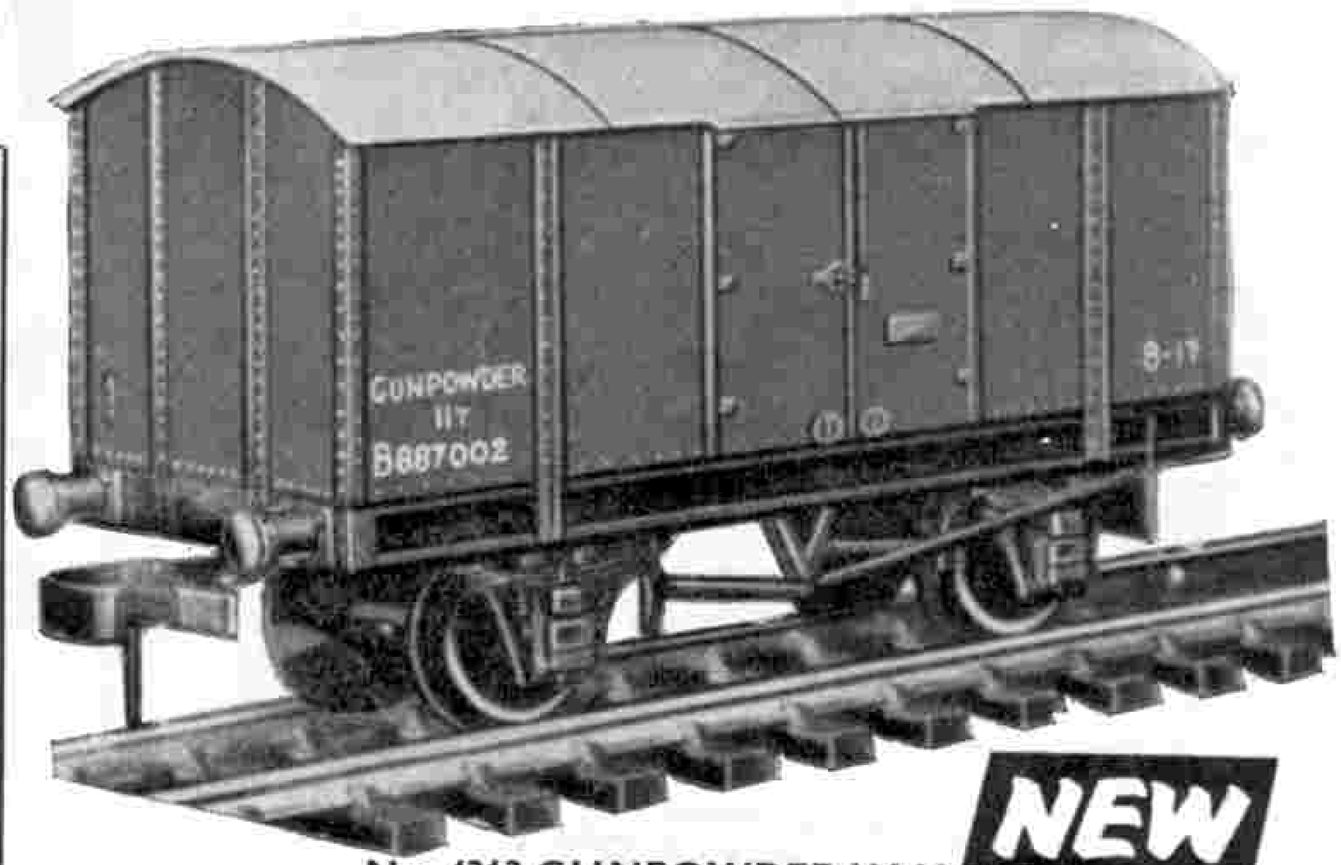

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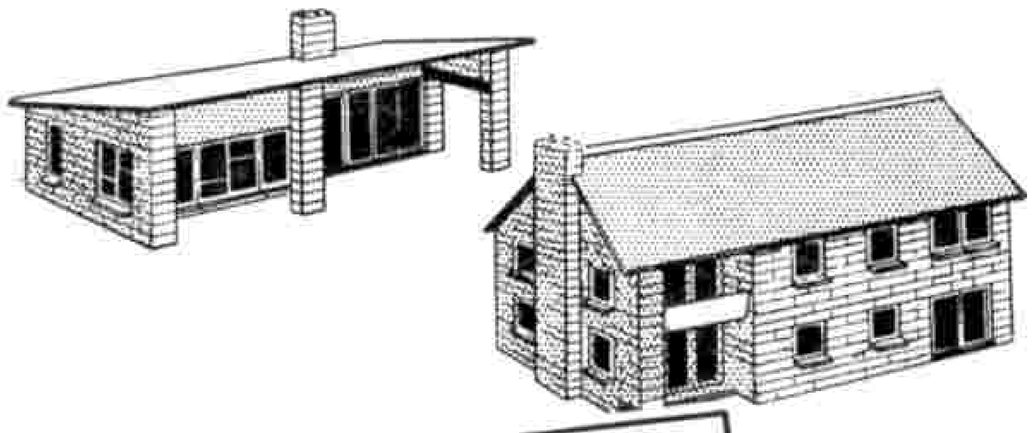

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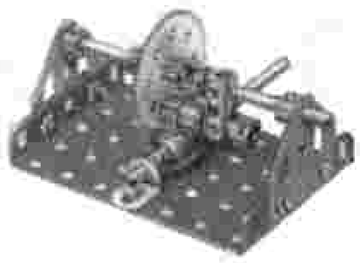

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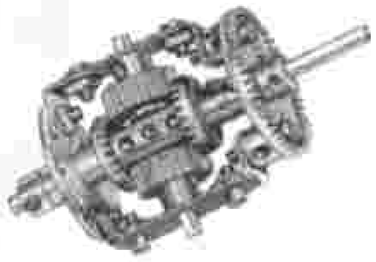

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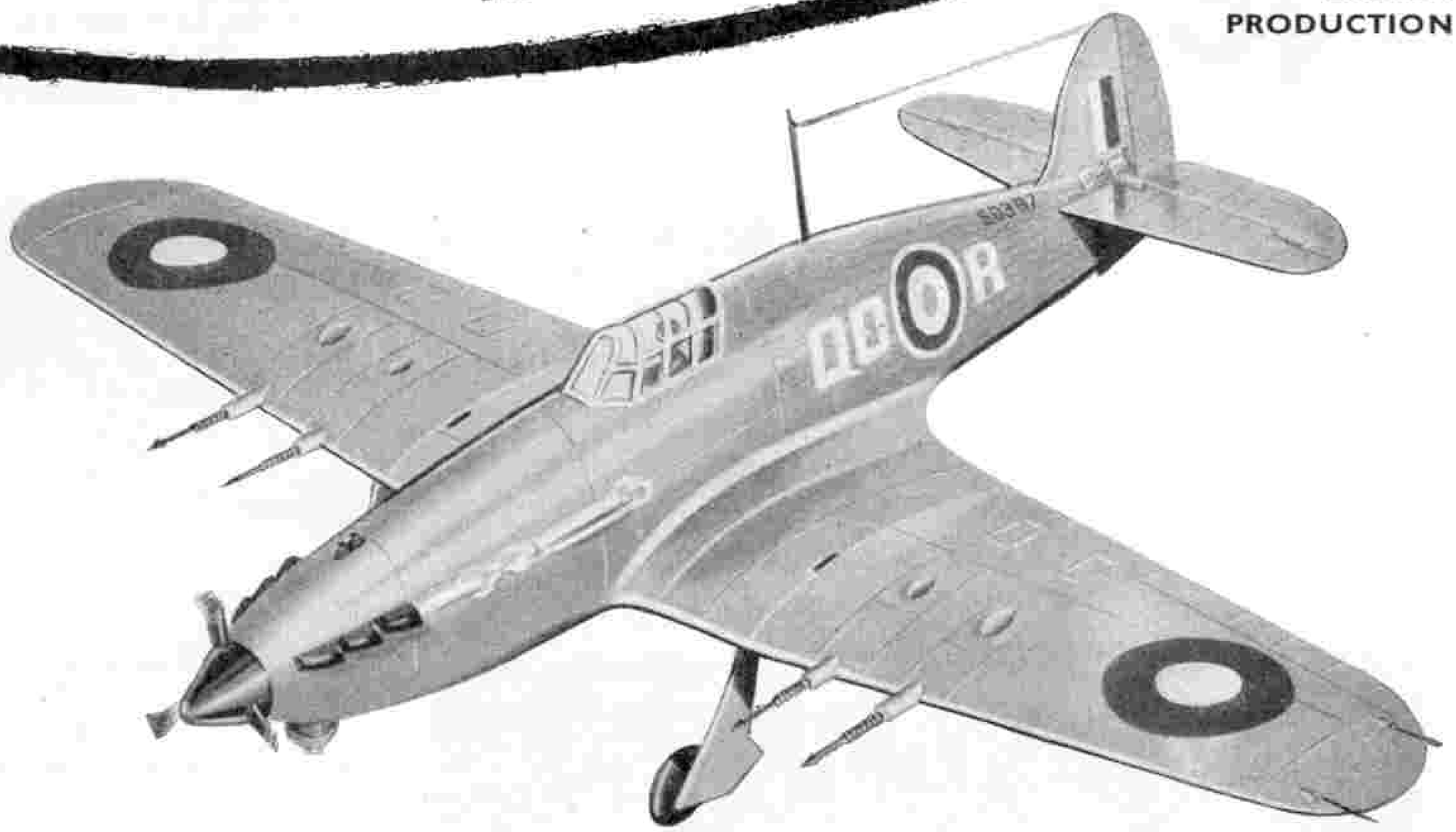

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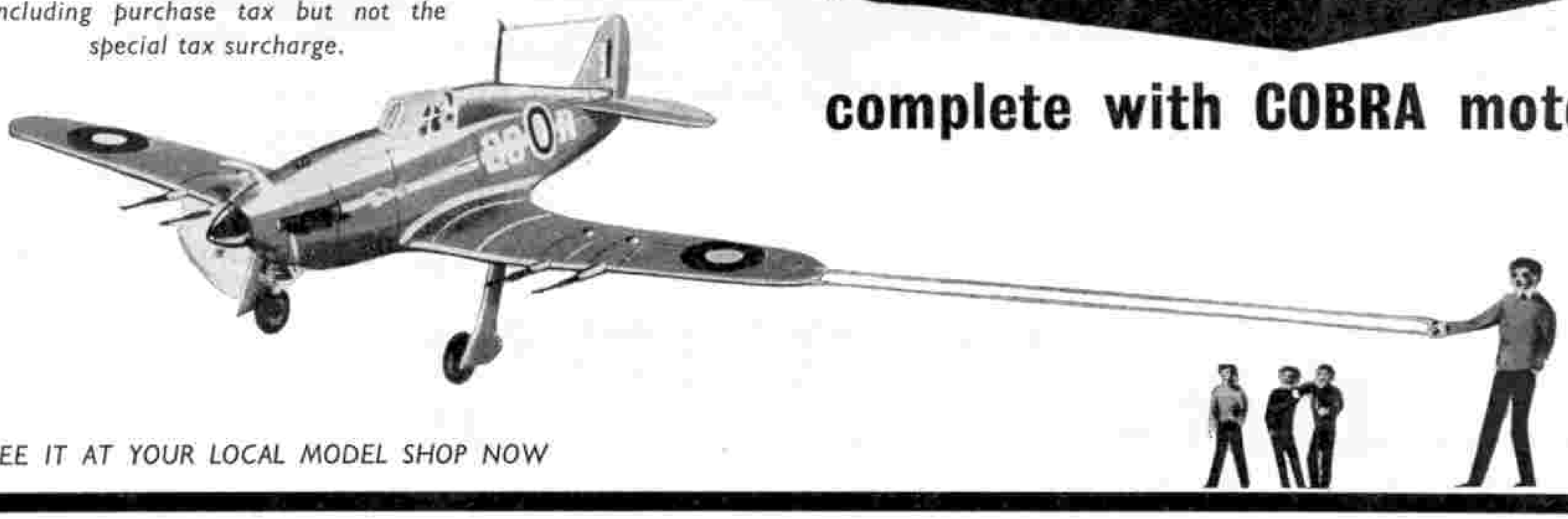

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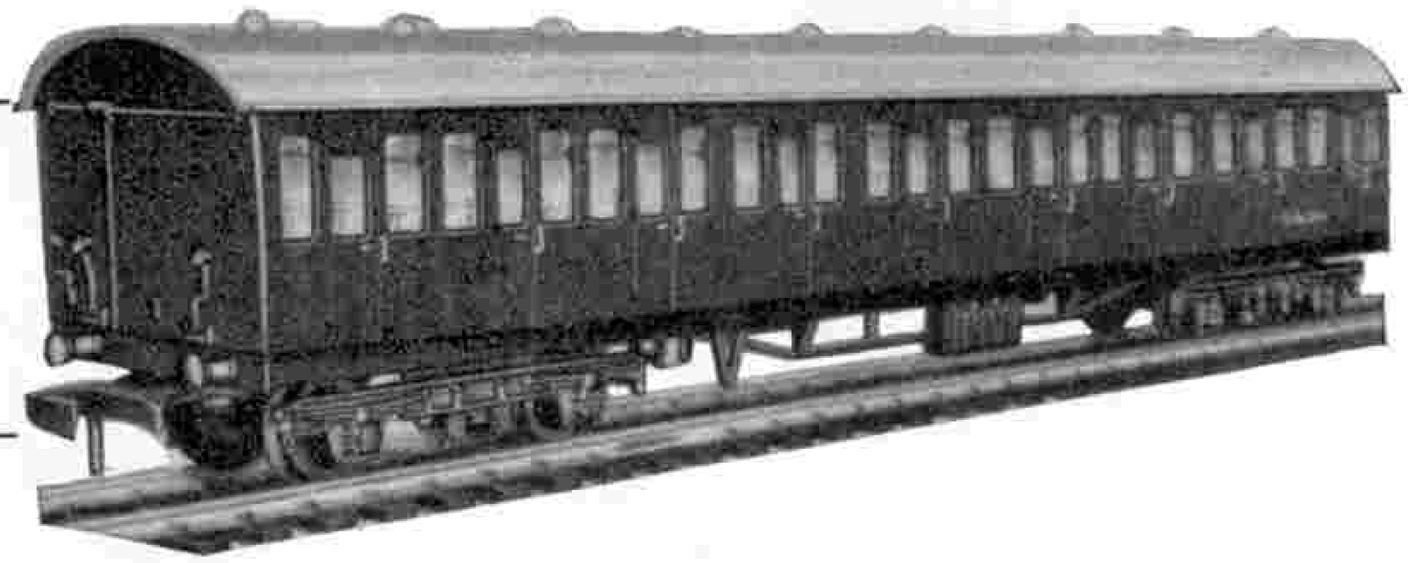
These new Hornby-Dublo Suburban Coaches, representing B.R. compartment stock, are built to the same standards as the Corridor Coaches already in the range. The metal bodysides have clear plastic windows, while interior seating, the roofs, ends and under-frame details also are mouldings. Bases and bogies are of metal, with smooth-running nylon wheels.



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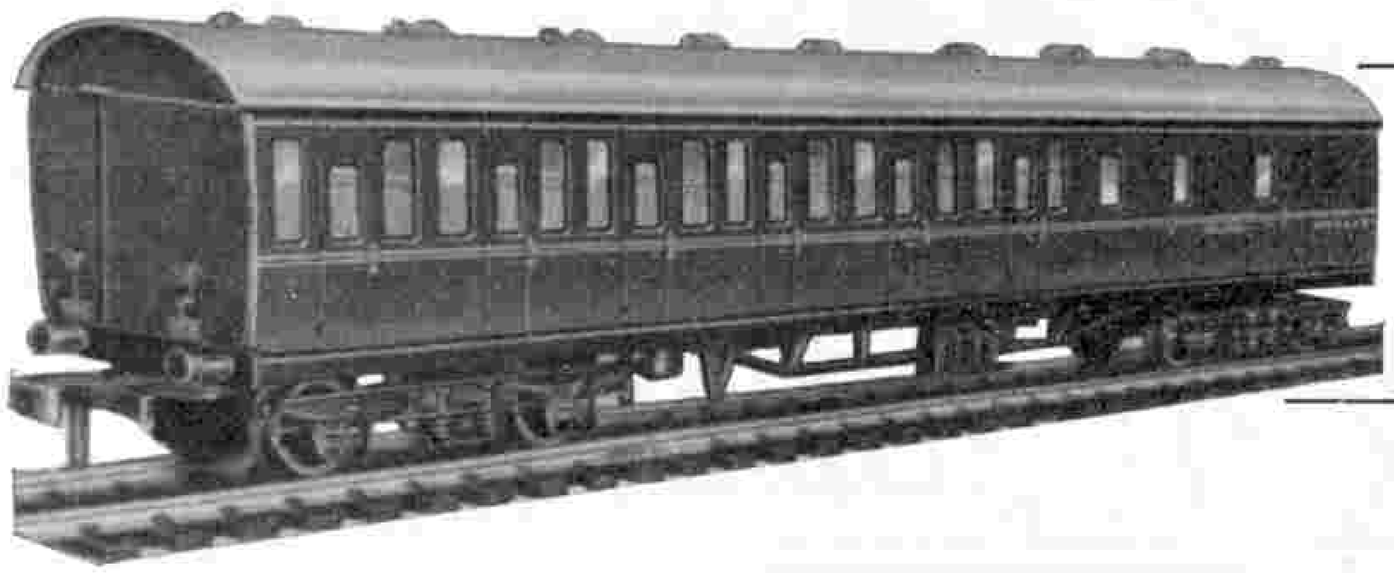

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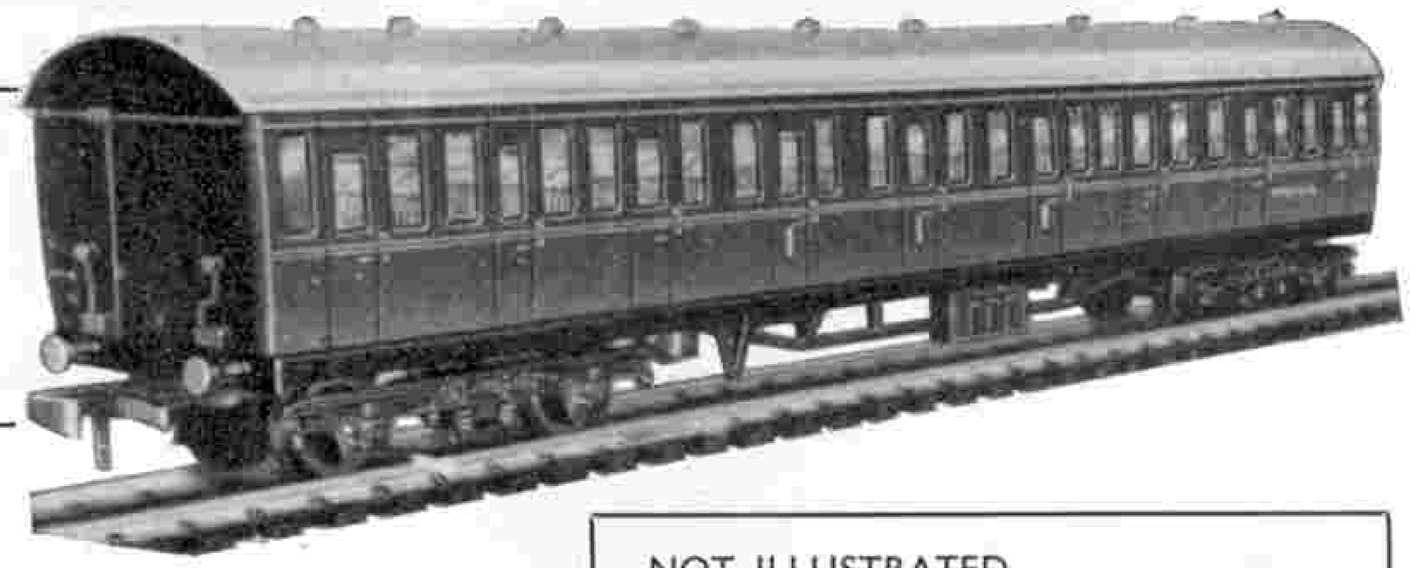

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Minister's Tribute To Meccano

AN interested visitor to the Meccano Works and Head Office at Binns Road recently was Britain's Minister of State, Board of Trade, Sir Keith Joseph. As most of our readers are fully aware, Meccano is known in many countries overseas and, in fact, the firm's exports last year amounted to some 38 per cent. of its total trade. Chief of our export markets is Canada, with Australia in second place and Holland and America coming close on their heels. In France we have our own subsidiary firm Meccano (France) Ltd., who, like ourselves, export to many parts of the world.

Sir Keith Joseph, who was on a fact-finding tour of industrial centres, addressed a Press conference in the display room at Binns Road, and paid tribute to Meccano Limited for the work accomplished in the export field. He spent more than an hour on his tour of the factory buildings and saw Dinky Toys, Meccano itself and Hornby-Dublo Electric Trains being made. In our illustration you see Sir Keith viewing some of the special machinery which turns out the metal wheel centres for Dinky Toys models.

Towards the end of his visit, the Minister unveiled a plaque in the wall of a new extension which is being added to the Binns Road Factory and should be completed late this summer. The new building, which has a floor area of 20,000 square feet, will be fitted with conveyors approximately 100 feet long to handle the whole of the electrical network connected with the production of Hornby-Dublo Electric Trains. Space is also available for the storage of finished goods.

THE EDITOR.

Next Month: THE G.M. AEROTRAIN

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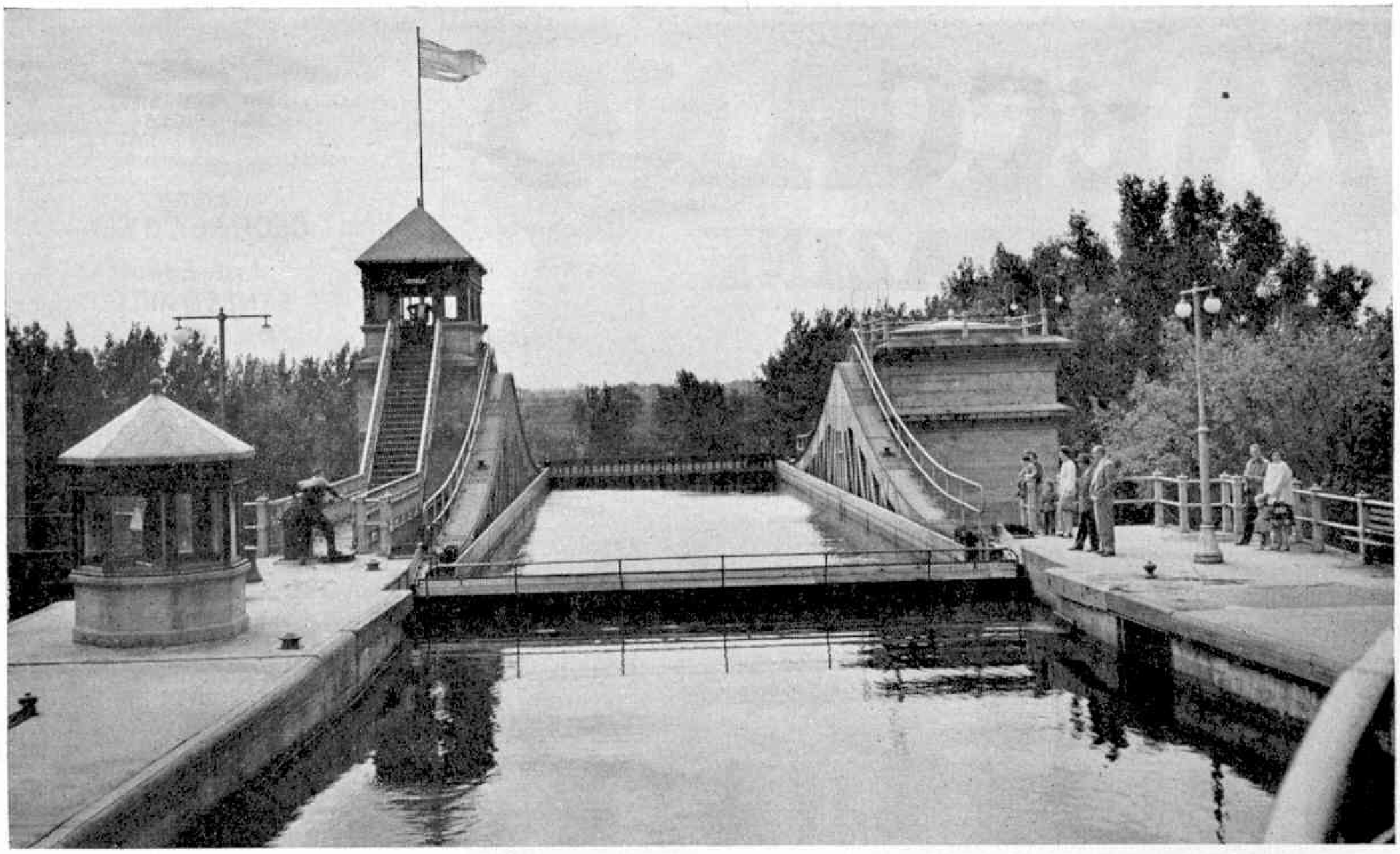
THIS MONTH'S COVER

On the Trent–Severn Waterway, in Canada, is the famous Peterborough Lift Lock which is the subject of our front cover this month, and which is described in detail on page 136 by Harry McDougall. The Peterborough Lift Lock was built to overcome the drop of 77 feet in the river between Nassau and Little Lake and, as the fascinating article on this wonderful engineering project reveals, it does the work of four separate conventional locks.



THE PETERBOROUGH LIFT LOCK

By HARRY McDOUGALL

CANADA'S famous Lake Ontario is connected with Lake Simcoe by the Trent-Severn Waterway. At the town of Peterborough, boats using that waterway are faced with a difference in levels, and are raised or lowered by means of a huge, hydraulic lift lock, instead of by the conventional method of a series of locks. This lift lock is the biggest of its kind in the world.

Recognition of the advantages of the Trent Waterway system as a means of transportation goes as far back as Canada's first citizens—the Indians.

As early as 1615, while exploring the region, Samuel de Champlain mapped the route which the canal ultimately took. By 1833 the project was being widely discussed, but it was not until 1881 that a survey was commissioned which finally resulted in the excavation of the Trent Waterway System.

In the late 1800's canal traffic was considered of paramount importance to Canada, and the Trent system was to provide a new route to and from the West for the handling of wheat.

The Peterborough Lift Lock was built to overcome the drop of 77 feet in the river between Nassau and Little Lake. According to the newspapers of that day, there were at that time only three hydraulic lift locks in the world. The first of these was on the River Weaver, in England, with a lift of 50 feet, the second at La Fontinettes, in France, and the third was in Belgium.

In 1896, the Canadian Dominion Government sent the Superintendent of the Trent Canal in Peterborough over to Europe to study the operation of this new type of lock. On his return he reported that the device was quite practical. It was found, however, that little of the detail of these earlier locks could be incorporated into the Peterborough lock, so the design, layout and general arrangement of the new project was executed by local engineers.

A hydraulic lift lock is essentially a marine elevator designed to take the place of ordinary locks where a great difference of water level is found in a short distance. On the Trent-Severn Waterway, in a distance of only 48 miles, the water level rises from 613 feet above sea level to 813 feet. Since the average lift of the 43 locks on the waterway is 16 feet, the Peterborough lift lock's raise of 65 feet does the work of four separate conventional locks.

* * * *

The hydraulic lock may be considered as two water-filled tanks, each large enough to hold the biggest boat using the canal, and supported by plungers or pistons. The chambers alternate between the upper and lower levels rather like a lift and its counterweight which counterbalance each other as they ascend and descend. By allowing an extra 100 tons of water to pass into the upper chamber, the weight is increased sufficiently to force it

The picture at the head of the page shows the upper level of the Peterborough Lift Lock, on the Trent-Severn Waterway, Ontario, Canada. The illustrations to this article, and that on which our cover is based, are by courtesy of the Ontario Department of Travel and Publicity, Toronto.

down and also to force the piston beneath the lower chamber upward, raising it to the higher level.

The chambers are watertight and the gates at each end are hinged so that they completely submerge to allow a boat to pass over them when moving in and out of the chamber. The water levels above and below the lock are known as reaches. There is a space between either end of the chambers and the reach gates of almost two inches. When a boat enters or leaves one of the chambers, this space is closed and made watertight by the inflation of a seal which consists of a flat rubber tube fastened to the gate frame. Under a pressure of about 10 pounds per square inch this expands and presses against the end of the chamber.

Three men are required to operate the lift lock—the lockmaster and two assistants or gatemen. The lockmaster stays in his cabin up on top of the centre tower where he has a clear view of the entire operation. He communicates with his assistants by signals—and uses levers to operate the mechanism.

One gateman operates at the lower level and one at the upper. Each is responsible for guiding the vessel into the chamber and mooring it properly before its journey up or down. The gateman also opens or closes the submersible gates and inflates or deflates the seal tubes.

To enter the lift lock for an ascent the skipper signals his intention to use the lock by sounding his siren, whereupon the lower gateman directs him to either the right or left side of the canal, depending on which chamber happens to be at the lower level.

The gateman then "sinks" the two gates—one which seals off the end of the chamber and the other which holds back the water of the lower canal. The boat is hauled into the chamber and securely moored. The two gates are brought up from under the water to their normal positions and the seal tubes are deflated to disconnect the chamber from the lower canal.

The lockmaster, in his lofty control tower, now takes over. Since it is the upper chamber that does all the work, it has been stopped on the previous lift about eight and a quarter inches lower than the bottom level of the upper reach. The lockmaster, having checked that the vessel down below is securely moored and that the gates are closed, allows the extra water into the upper chamber and it is then sealed off. Since the floor of the upper chamber is then below the canal bottom, the extra 100 tons of water is readily available. This extra weight causes the upper chamber to descend, forcing up the lower one in which the boat is riding. The whole operation takes a little over two minutes.

The extra water in the descending chamber is simply permitted to flow out into the lower reach of the canal. Above, the gateman inflates the tubes to provide the watertight seal between the chamber and the canal, lowers the two gates and the boat continues on her way.

The record lockage for the Peterborough Lift Lock is six and a half minutes from the time of stopping the boat in the lower reach to her proceeding on her journey, under her own steam, in the upper reach.

Today, the Trent Waterway system is used entirely for pleasure. Summer finds hundreds of craft, from canoes and outboard-powered skiffs to luxurious yachts of Canadian and American registry, enjoying its leisurely flow.

* * * *

The reporter for the *Peterborough Examiner* who covered the lift lock opening more than half a century ago was probably more prophetic than he realised when he stated, rather quaintly, "This will make Peterborough a place of pilgrimage, from far and near, for there will be perpetual unrest in the public mind to see the wonderful and massive mechanism by which the simple natural law of equilibrium makes a steamer, laden with a hundred passengers, mount a distance of 65 feet through the air like a bird, or a barge, laden with 25,000 bushels of wheat, drop as gently and smoothly as a tuft of down the same distance."

SOME FACTS ABOUT THE LIFT LOCK

Height of lift: 65 feet.

Dimensions of presses: external diameter of cylinders, 8 feet 3½ inches; diameter of ram, 7 feet 6 inches; working stroke, 65 feet (the largest ever built).

Pressure in presses during operation: 600 lb. per square inch.

Approximate weight of water in each chamber: 1,300 tons.

Depth of water in chamber: 8 feet.

Dimensions of chambers: each 140 long by 33 feet wide; depth, 9 feet 10 inches.

Looking down from the top of one of the side towers of the Lift Lock. Beyond the chamber in which the vessel on the left is moored can be seen the lower level, or reach, of water.

THE MODERN TRAMWAY AND LIGHT RAILWAY REVIEW

(Ian Allan Ltd. Price 2/6d. monthly)

Ever since 1937, when the Light Railway Transport League was formed, *The Modern Tramway*, the league's official journal, has presented up-to-date information and historical material on tramways throughout the world. It has long been recognised as one of the main sources of such information and has enjoyed a wide circulation not confined only to members of the League.

Now that interest in tramways has reached very great proportions, it has been decided to make the journal available to a wider public, with the result that it is now produced by Ian Allan Limited jointly with The Light Railway Transport League, and is on general sale. The opportunity has been taken to increase the number of pages and to widen the field of interest to include light railways of all kinds, as well as electric tramways.

Each edition is printed on high quality paper and contains numerous illustrations.

IN THIS ARTICLE G. H. ROBIN DESCRIBES . . .

A Rail Trip On The "Sou' West"

A Whitelegg "Baltic" at St. Enoch Station, Glasgow in 1922. Engines of this class were used on the Glasgow–Ayr expresses. Photograph by R. D. Stephen.

THE triangular perimeter, Glasgow–Stranraer–Dumfries, of the former Glasgow and South Western Railway, often called the *Sou' West*, offers a fine scenic trip by rail to the traveller who wishes to cover a large and varied area of Scotland. From Glasgow, what was the secondary main line of that company, via Ayr and Girvan on the Ayrshire Coast, is traversed to Stranraer, then the line due east through Galloway to Dumfries is covered. From there the fine scenery of the Nith Valley on the main line north from Carlisle provides a splendid concluding sketch.

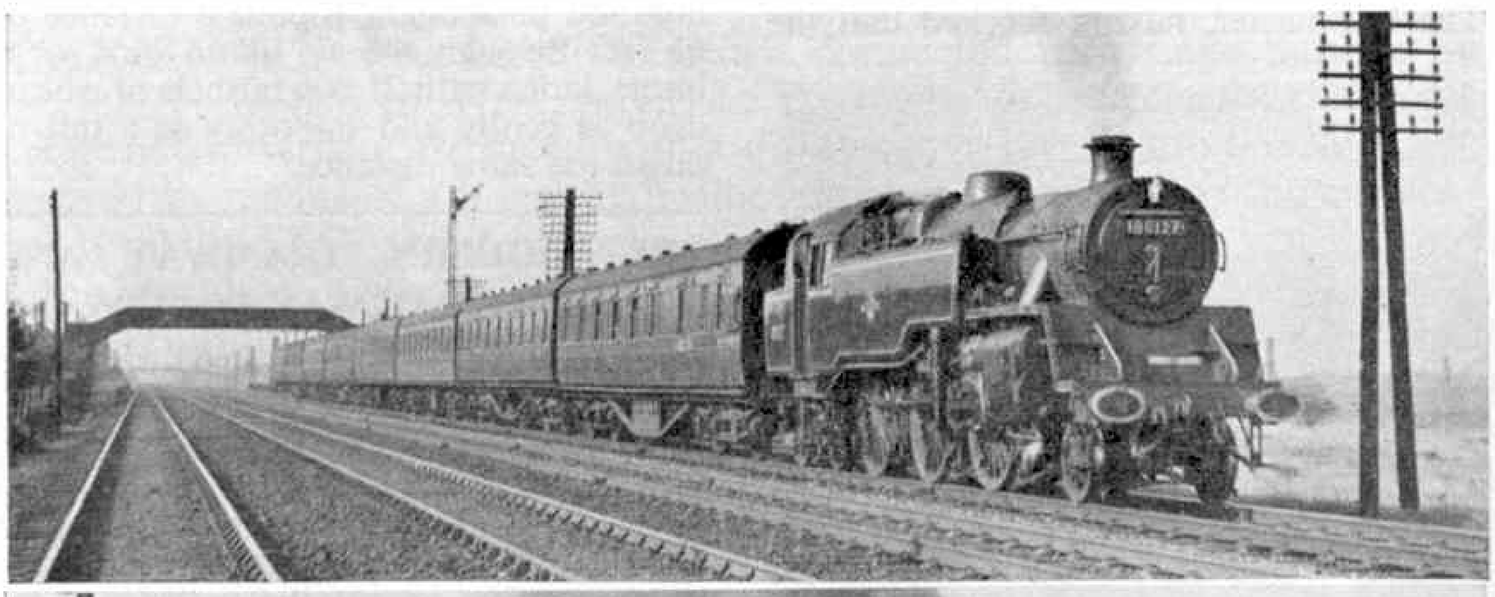
The Ayr and Girvan services were dieselised from November 1959, when an interval-service was introduced. At the time of writing the intervals are hourly or half-hourly, according to traffic requirements, as far as Ayr, with certain trains continuing to Girvan at approximately 90-minute intervals. Only four continue to Stranraer. During the summer months there are several additional steam trains to Ayr, and to and from Stranraer Harbour in connection with extra Irish steamer sailings.

On the first leg of our journey our route lies via Paisley, and after leaving St. Enoch Station we cross the River Clyde near Glasgow Green, on the first railway bridge to be built across the river within the city boundaries. The line has four tracks out to Paisley, to which point they are shared from Shields Road Station by the trains from the Central Station to Gourock and Wemyss Bay.

The Stranraer route is divided into three distinct sections geographically, and as far as Ayr the grading is negligible, the last fourteen miles or so through Troon and Prestwick being practically dead level as the trains run past the famous championship golf courses at these resorts.

On leaving Ayr, a very "saw-toothed" profile ensues for the 21½ miles to Girvan, via Maybole, with short, steep hills and sharp curves over which steam locomotives had to be worked very hard to keep time. The scenery here is pleasant, with sloping green hills, and is nicely wooded in parts.

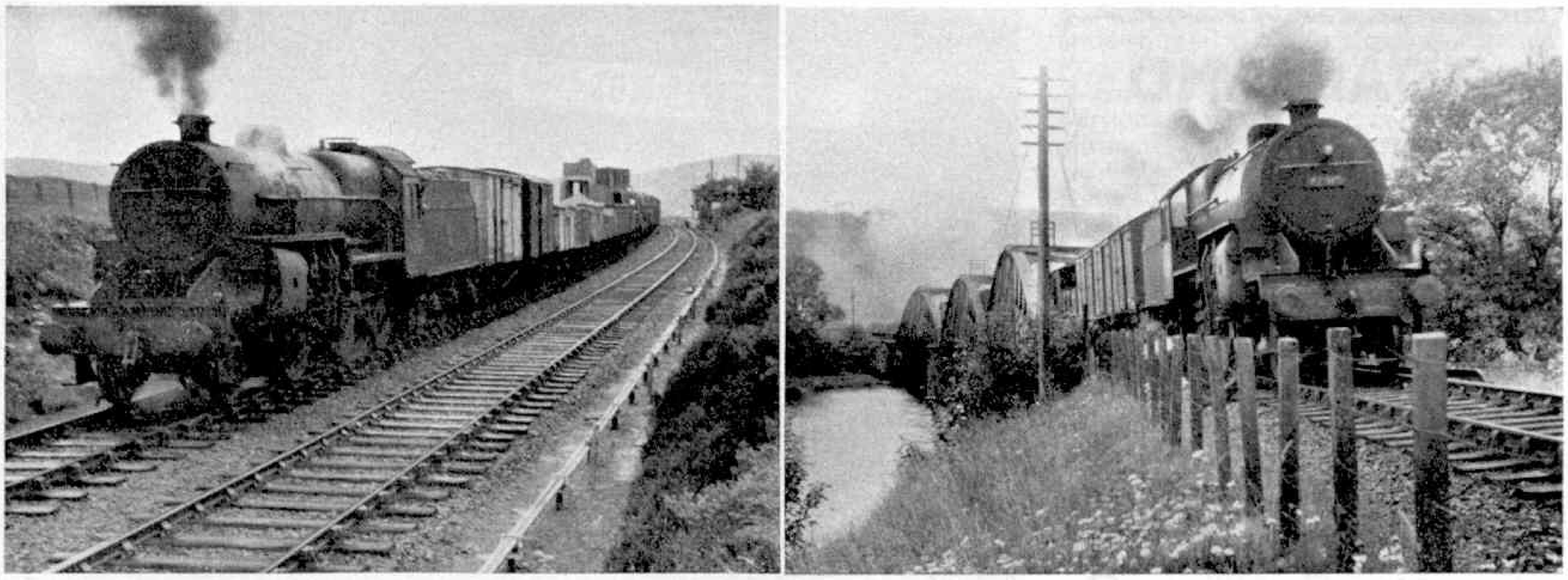
At Girvan, the contour of the land changes again; the line becomes single track and southbound trains are faced with two fearsome climbs. The first, right from Girvan platform end, is of four miles graded at 1 in 54, followed by a similar distance down the valley of the Stinchar to Pinwherry. Once again the platform end marks the beginning of a difficult stretch, this time an eight-mile bank varying between 1 in 67 and 1 in 73 through Barrhill Station to the Ayr–Wigtown county march high up on the bleak, boggy moorland.



A Wild Section

The gradients are then steep down to near Luce Bay on the Solway Firth where the line from Dumfries is joined at Challoch Junction and followed westwards to Stranraer.

Above: Standard 2–6–4T 80127 leaving Hillington (East) with a Girvan–Glasgow (St. Enoch) train. Below: Class 5 4–6–0 45083 getting away smartly from Mauchline with a Glasgow (St. Enoch)–Carlisle stopping train. These two photographs and those on the opposite page are by the author of this article.



A Dumfries–Stranraer goods hauled by Horwich 2–6–0 No. 42918 (left) on the wrong road at Lochskerrow loop to allow a passenger train to overtake. (Right) L.M.R. 2–6–0 No. 42915 crossing the Ken Viaduct, near New Galloway, with an up cattle train.

A wild section indeed is that between Girvan and Challoch Junction, and in the days of the famous so-called "Paddy" boat expresses some very fine running was achieved over this difficult length, with its slacks for the passing stations and the hand exchange of single-line tablets. A wet rail could be very troublesome and there have been many instances of south-bound trains stalling on the bank out of Girvan, or, northbound, on the treacherous "Swan's Neck" on a grade of 1 in 57 at the summit near Glenwhilly.

Stranraer is the packet station for Larne, Ireland, and a mile-long branch runs down to the Harbour Station, while the line through the Town Station originally continued over the hills to Portpatrick, a very picturesque and sheltered harbour nestling at the foot of the steep cliffs.

There had been a Royal Mail service between Portpatrick and Donaghadee on the Irish coast since 1642 and on the opening of the railway this service was still continued. However, these two harbours proved inadequate for the larger vessels necessitated by increased traffic, and the service was transferred to Stranraer and Larne respectively in 1863, the daily steamer being inaugurated in December 1872.

Travelling now from Stranraer we retrace our steps to Challoch Junction, where we fork right and take the fascinating "Port Road", as the Dumfries line has always been known to enginemen. It is principally through Wigtownshire and Galloway, and is steeply graded with single track. Over the first summit is Newton Stewart, where the branch railway runs for almost twenty miles over the peninsula known as "The Isle of Whithorn" to terminate at a small tidal harbour at Garliestown which was used up to 1935 for excursions to the Isle of Man.

East of Newton Stewart the main line climbs for over seven miles at 1 in 80 to the next summit at Gatehouse-of-Fleet Station, which is sited six and a half miles north of the township. The line then undulates through dismal grey hills, dipping twice to cross the Wee Fleet and the Big Fleet rivers on masonry viaducts, before another bleak moorland section leads to a summit at Lochskerrow platforms.

A Railway Outpost

This is a true railway outpost consisting of a few houses for the signalmen working the box, to which there is no access, not even a footpath, save the railway. There is also a pumping station obtaining water from the nearby loch, as the other watering points on the line are not too dependable.

The short platforms were originally for private use only, but the name "Lochskerrow" is now printed in public timetables and all trains except the *Northern Irishman* boat expresses call there.

The descent to New Galloway Station is made cautiously through rock cuttings and heatherclad slopes, after which is a level stretch along Loch Ken and the River Dee to Castle Douglas, the biggest town on the line.

The section just described was originally projected as The British and Irish Grand Junction Railway, and at one time was known as The Portpatrick and Wigtownshire Joint Railway and was managed by a committee with representatives from the Caledonian, Glasgow and South-Western, London and North Western and Midland Railways. All these companies became merged in the London, Midland & Scottish Railway in 1923, and the committee was dissolved.

From Castle Douglas a small branch runs southwards down the Dee to Kirkcudbright, on the Solway Firth, and at the time of writing it still has a passenger service based on Dumfries.

There is now nothing of particular interest until crossing the River Nith on a five-arch masonry viaduct on the outskirts of Dumfries, and if we have travelled on a local train, possibly behind a L.M.R. Class 2P 4–4–0, we shall arrive at one of the bays on the down platform.

There is, unfortunately, little traffic over the "Port Road" today, the through local trains being limited in winter to two each day, with an extra on Saturdays. There is, of course, *The Northern Irishman* which leaves Euston at 7.10 in the evening and Dumfries at 3.16 the next morning and then calls at Castle Douglas and Newton Stewart only. The return night working is at 10 p.m. from Stranraer Harbour, but there are reliefs and daylight expresses during the summer months. Carlisle engines work through and "Clan" 4–6–2 and "Royal Scot" 4–6–0s may be seen on these turns. There is still a large traffic in Irish cattle and Horwich 2–6–0s or Moguls from Dumfries shed are sometimes to be seen working these specials.

Dumfries Station area has recently been re-signalled with colour light aspects, but the round masonry building constructed as the original signal box can still be seen in position on the top of the cutting on the up side.

Summit at Upper Cairn

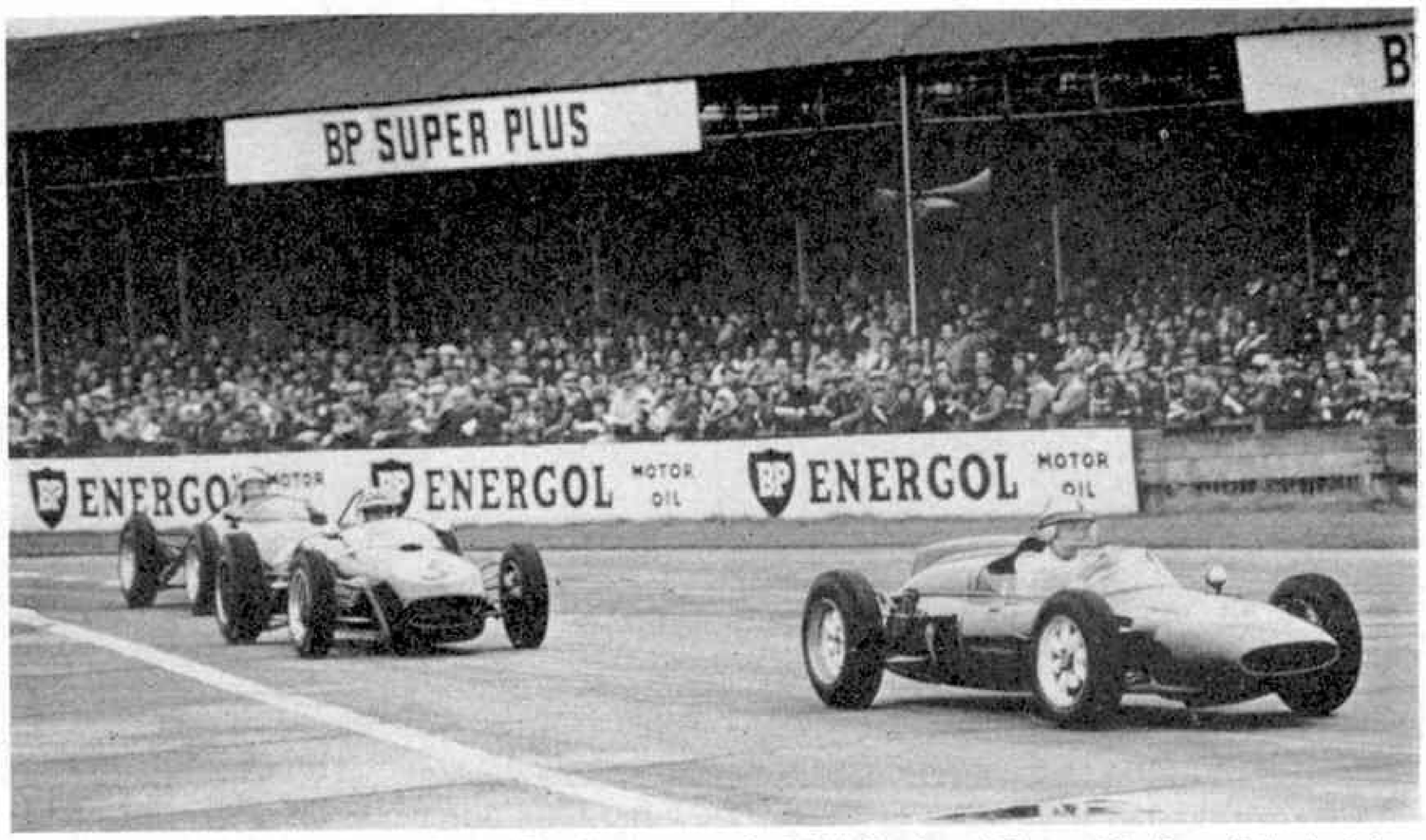
We now await the arrival of an express train for Glasgow (St. Enoch), which may well be the down *Thames–Clyde* express or a Leeds–Glasgow express, and we can speculate as to the motive power. Since the allocation of A3 "Pacifics" to Leeds (Holbeck), they have taken over the bulk of the Glasgow workings, although "Royal Scots" and an odd "Britannia" provide a welcome alternative. As some driving links from Corkerhill Shed work through to Leeds it is possible that we may have a Scottish crew working home.

Northwards we climb the Nith Valley, with undulations, to a summit at Upper Cairn near New Cumnock. The Nith is crossed twice within the first five miles, and the second bridge marks the start of the first section of the ascent which terminates at Drumlanrig Tunnel, nearly one mile in length and cut through rock.

Now ensues the most attractive and picturesque length of the main line as we run beside the river, (*Cont. on page 174*)

ROAD AND TRACK

Big Events Need Months Of Planning



An exciting moment during the Glover Trophy event at the 1961 Goodwood Easter Meeting. Salvadori, in a Cooper, leads Ireland (Lotus) and Brooks (B.R.M.). This photograph is reproduced by kind permission of the "Autocar."

FEW people realise the amount of planning and hard work that goes into the promotion of a major international event in the motor-racing calendar. This month—on Easter Monday—the British Automobile Racing Club will be promoting at Goodwood the first big race, in this country, of the 1962 season. Since 1949, the Goodwood Easter Meeting has set the scene for the motor-racing season and it is invariably an excellent "opener" for the enthusiast, or introductory event for the novice.

For nearly six months, in their Park Lane offices, the experts of B.A.R.C. have been planning this year's Easter Meeting, and negotiations have been in progress with the top teams since last December. Entry forms were sent out in February, giving details of the various races and their classes, and in the last few weeks the picture has built up rapidly. As usual, there will be a varied programme for Formula I, Formula Junior, Sports Cars, Grand Touring Cars and Saloon Cars.

The first official practice session for the meeting took place on Saturday, March 3, but the top teams will not arrive at the Sussex circuit until Easter Saturday. Incidentally, I expect to see quite a few

By

PETER LEWIS

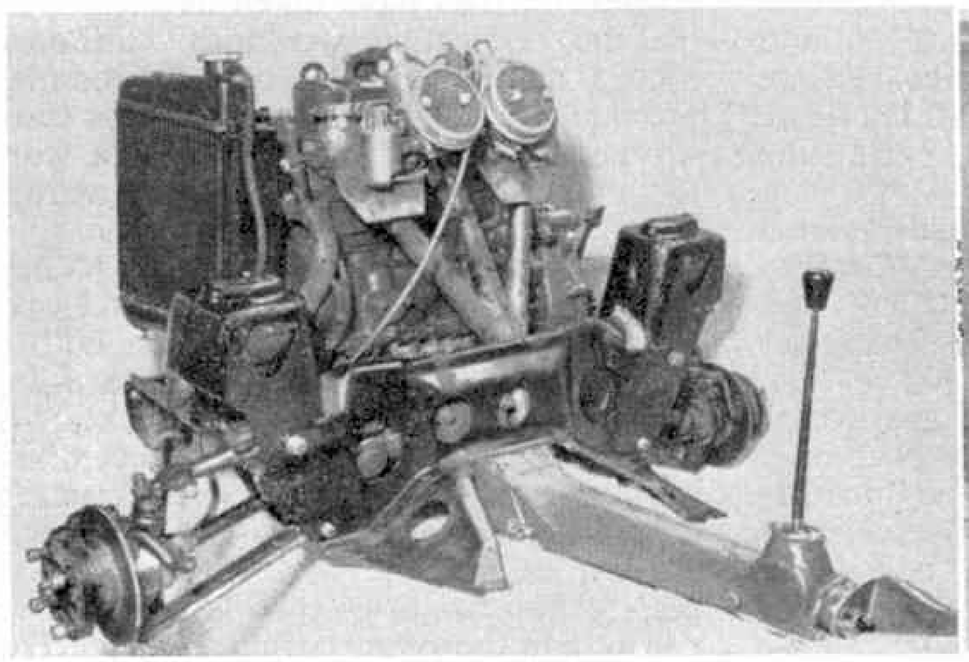
drivers lapping the 2.4 mile circuit this year in 1 minute 25 seconds—an average speed of 101.65 m.p.h.—for the entire circuit has been resurfaced at a cost in excess of £10,000. I am told that the F. J. Lolas have been round in 1 minute 28 seconds (98.18 m.p.h.) a remarkable average for a Formula Junior car when it is appreciated that Goodwood was not lapped at over a hundred miles an hour until the 1960 Easter Meeting.

On Easter Saturday, the transporters will be arriving at Goodwood from an early hour, and the various team managers will be calling for a maximum effort from their drivers, for the practice times on the Saturday govern the starting positions on race day. The best position in each race is the "pole" position on the starting grid —i.e. on the front row nearest to the starter's flag.

On Easter Saturday, under the critical eye of Clerk of the Course John Morgan (who is also Secretary of the B.A.R.C.) the complex race organisation will be in operation. In the paddock, four scrutineers will be busy examining the cars and ensuring that not only are they 100 per cent. safe but that mechanically they comply with the regulations governing each race.

The six timekeepers under A. L. Ebblewhite—son of a famous father who was Chief Timekeeper at Brooklands for many years—will operate from the Timekeepers' Box opposite the starting line, recording every lap by every competitor; and on a busy practice day thousands of laps have to be recorded. The Chief Observer, at Race Control, will be in touch by telephone with ten observers strategically placed around the circuit,

Below: The transverse 1-litre engine, gear-box and final drive unit of the Austin Mini-Cooper is extremely compact and provides the car with tremendous powers of acceleration. Right: Here is the car itself —the Austin Mini-Cooper which, as its name suggests, is based on the Seven (850 c.c. uprated to 997). The car has disc brakes on the front wheels.



Racing Personalities

R. R. C. WALKER

Mr. Rob Walker.

WHEN Stirling Moss won the Argentine Grand Prix in 1958, this magnificent all-British victory in a world championship turned the spotlight on R. R. C. Walker, the quietly-spoken, unassuming enthusiast who had decided to pit the limited resources of his small équipe *against the might of powerful works teams. The spotlight has been on Rob Walker ever since, for his cars—with Moss at the wheel—have given this country some resounding victories. Some of these successes, like Moss's wins in the Monaco G.P. and German G.P. last year, are worthy of a premier place of honour in the record books.*

Certainly, Rob Walker should feature prominently in the record books, for it is he who has made it possible for Moss to fight for world championship honours with a British car. As patron and sponsor, Rob Walker has been the driving force behind the équipe *from Dorking, Surrey, ably supported by Alf Francis, who was Moss's mechanic in 1954 when Moss raced the green 250F Maserati. Walker, Moss and Francis have one thing in common—the world championship for Stirling Moss, but in a British car.*

This year, in an all-out effort to give Moss the best possible chance, Équipe *Walker will concentrate mainly on world championship events. Moss will be Walker's only driver and there will be two Lotus Formula I cars, two Coventry-Climax V.8 engines and a B.R.M. V.8 engine, looked after by Francis and three mechanics.*

Although Rob Walker is regarded by many as having always been a patron, he was an active participant before the war. With typical modesty he does not rate himself very high as a driver but, even so, he drove at Le Mans and knows something of the feelings of the man at the wheel. His ex-works Delahaye—driven by Arthur Dobson—won a race at Brooklands in 1939 which decided the fastest road-racing car in the country. Then came the war and Rob Walker became a Fleet Air Arm pilot, returning to motor-racing just as soon as he could get out of uniform. But he promised his wife he would not race again, and became a patron. In 1953 his Connaught, driven by Tony Rolt, won the Coronation Trophy at the Crystal Palace —one of sixteen firsts and seven seconds in 24 meetings that were credited to Équipe *Walker in 1953. Last month, it was announced that he had been awarded the Ferodo Gold Trophy for his outstanding contribution to motor racing in 1961, particularly by entering the cars which Stirling Moss drove to victory in the Grand Prix of Monaco and Germany.*

For years Rob Walker has been seen around the circuits but, unlike some of his contemporaries, he rarely gets excited about anything and never seeks the limelight. In the pits, in the paddock, talking to Moss on the grid before a big race or giving Alf Francis instructions by the transporter afterwards, 44-year-old Rob Walker looks more like a curious, rather worried bystander than the patron of an équipe *that I, and many others, hope will win the world championship for Britain, Moss and Walker in 1962.*

while the Chief Marshal, in the pit area, will control the paddock and start line marshals. There are also ten flag marshals, with attendants at strategic points around the circuit, responsible for the flag signals that are so valuable to drivers in the cut and thrust of a closely-fought race.

The medical services are second to none. The Chief Medical Officer, with a sick bay at his disposal in the paddock, controls a team of medical officers who are actually out on the circuit, one at each of the Observer Posts. There is also the excellent first-aid service of the St. John Ambulance Brigade.

Finally, there are the Course Marshals whose duty it is to keep the public behind the barriers, the commentators who operate the public address system, the Score Board Marshals, the efficient and always helpful Press Officers, the Airfield Controller who looks after the landing strip which some of the drivers and patrons use, the teams who operate the breakdown lorries supplied by local garages, and the Goodwood Estate Company, Ltd., which is responsible for fire precautions.

It is a highly complex and very efficiently run organisation, so spare a thought for the men behind the scenes—nearly 150 of them—when you watch the immaculately-prepared cars being lined up on the grid. For without the men behind the scenes, most of them unpaid volunteers, there would be no motor-racing.

THE MINI-COOPERS

Last September, when the British Motor Corporation announced the Austin-Seven Cooper and the Morris Mini-Cooper, there were some who questioned the wisdom of one of the big manufacturers producing 90 m.p.h. versions of such small cars, thus giving their blessing to what is —generally speaking—a "hotted up" version of a standard car, and selling them through their countrywide network of dealers. For "hotting up" has been until quite recently, the province of the specialist tuning firms, and manufacturers have only been involved to the extent of increasing the performance of their cars for such events as the Monte Carlo Rally. These vehicles have always been known as "works" cars.

The action by B.M.C. was by way of emphasising that the Minis, though small and considered almost toy-like by some people, are so well designed and so safe to handle that their performance can be considerably improved without affecting the safety margin.

GREAT SUCCESS

Since the Minis were introduced in 1959, many enthusiasts have used them as a basis for further tuning, and have had great success in competitions, but the power unit of the Mini-Coopers is not so much tuned as developed by sound engineering practice from a well-established base—the power unit of the 1961 Cooper Formula Junior racing cars. Charles and John Cooper, whose father and son partnership has contributed so much to the sport of motor-racing, were quick to exploit the possibilities of putting a more powerful engine in the standard Mini. This is what Charles Cooper said, "From the time we first tried out the ADO.15 on a high-speed Continental trip we realised that the steering and roadholding of this outstanding model was such that it was operating far below its capabilities, and that it had a very great potential for development to a high performance saloon."

IMPRESSIVE FIGURES

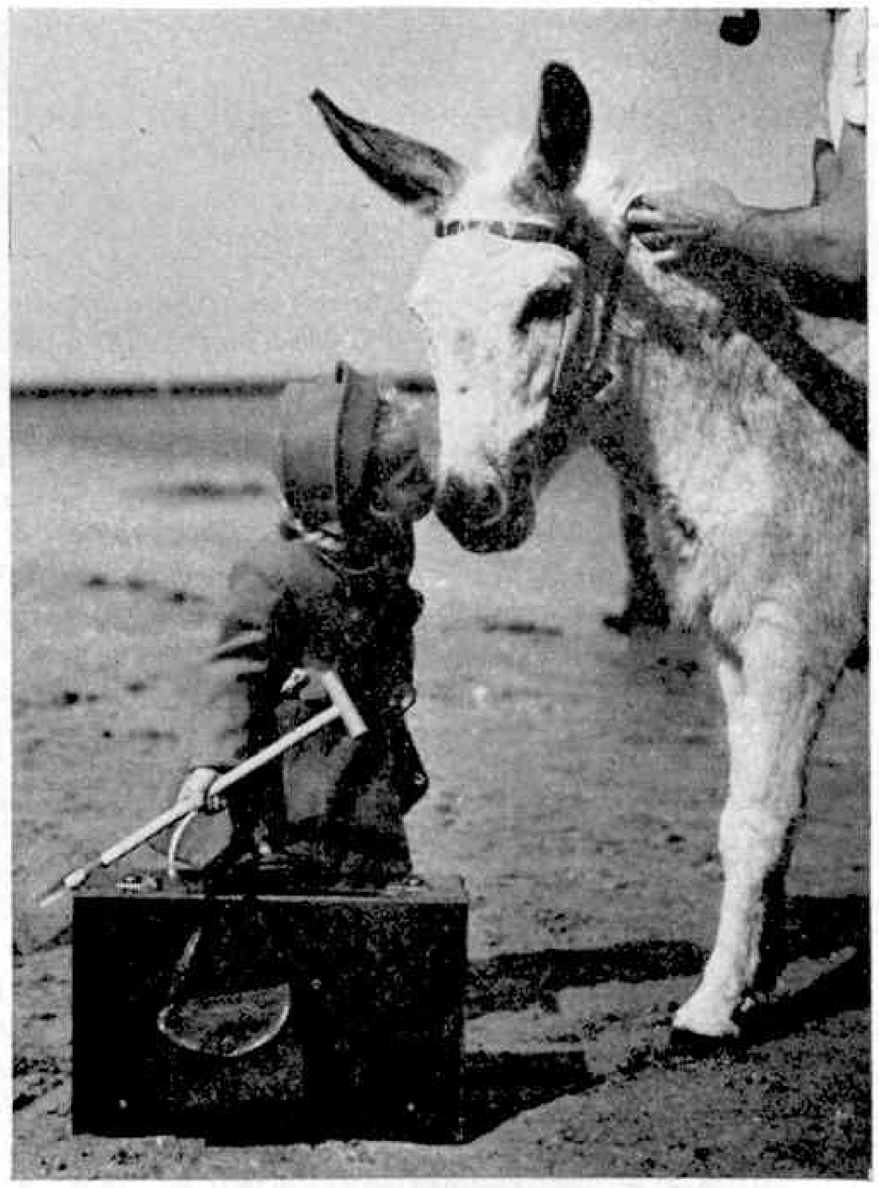
The acceleration figures of the Cooper-Minis are most impressive; 0–50 in 12.8 seconds, 0–60 in 18.5 seconds—performance that is matched by the new, stubby, remote-control gear lever, which is floor-mounted between the front seats and is a great improvement on the long, willowy gear lever on the standard models.

Although the engine has been increased in size from 850 c.c. to 997 c.c., the power output raised considerably and the performance so startlingly improved, the suspension as used on the standard car has required no modification whatsoever. So effective is the design of the independent rubber units on all four wheels that the system is more than adequate to ensure that there is no loss in roadholding or handling. However, the primary safety factor on the Cooper-Minis is the fact that Lockheed disc brakes are fitted to the front wheels, and that the overall effective braking area is increased from 67.5 to 157.4 square inches. This means, in effect, that the Mini-Cooper when stopped from 90 m.p.h. taxes the braking system no

(*Continued on page 149*)

Its name is often a synonym for fool, but in point of fact it is industrious, patient and long-suffering, says the writer of this article discussing . . .

The Neglected Donkey



Every week of the summer, Tony the donkey carries a lot of happy young people on his trusty back, then has to say goodbye to them—for another year, at least. Here is a particularly fond farewell from one of Tony's young riders.

THE donkey, for centuries the friendly servant of man, is on the decline in most countries. Centuries of neglect of a creature termed dingy, stupid, obstinate and degenerate—although in reality he is none of these things—have resulted in a steady decline in the numbers of a noble if humble beast.

In Britain, there are several thousand fewer donkeys each year, and the same is true of most European countries. Only in a few hot lands, in Spain, Egypt, Mexico, Persia and Malta, where the ass's qualities have never been in doubt, does he survive, often as the mainstay of the country's transport system over bad terrain.

Unlike most of our domestic animals, the donkey seems to have originated direct from a single wild species, the Abyssinian wild ass. First domesticated by the ancient Egyptians some time during Europe's Neolithic Age, before the horse, the donkey was elevated to a high place in the esteem of early civilisations. The Egyptians regarded him as sacred to the god Set, many Near Eastern races used him as a mount for people of high rank, and Mohammedans relied on donkeys for their long and laborious pilgrimages to Mecca.

By

DAVID GUNSTON

Donkeys played a great part in the civilised development of North Africa by the Moslems, and of Europe by the Romans and the Spanish. Pliny mentions a jack donkey selling for the equivalent of over £3,000 in our money, and prime stallions often changed hands in Rome for around £500.

Donkeys reached England in the tenth century, brought from North Africa by returning Crusaders. The Spanish introduced them first to Mexico and then to North America, and on that continent they thrived and grew big, aided by careful breeding. All these animals were much larger than most donkeys we see today. They stood 12 or 14 hands (over four feet) at the withers, and rather higher at the croup, while choice specimens stood 15 hands.

Some of the bigger animals were cross-bred with the Asiatic ass, or onager, to produce large riding beasts, and also, when bred with mares, heavyweight mules

Donkey races—or Donkey Derbies, as they are often known—are a favourite event at many summertime gatherings. Here young riders in Sussex are just about to get under way.

The donkey, when grown up, is used to carrying goods and people but when he is young, the trend may be reversed, as these pictures show. On the left Splash, a three-day-old baby donkey, is being carried carefully across the stable yard while his mother, Flo, stays close to the baby's side. The picture on the right is a flashback to 1958 when a party of French Foreign Legionaires came across Bambi, a baby donkey who was too weak to walk, and carried him back to base. He was made a Private First Class and became mascot of Company Six of the Legion's 13th Light Brigade.

for draught purposes. They all held their heads higher and more proudly than do their descendants today, and were given the very best of food and attention.

Endurance and Loyalty

Today, and for at least a century in Europe, donkeys have been only the poor man's beast of burden, the animal of the gipsy and the tinker, or the children's seaside plaything. Poor food and complete lack of careful breeding have steadily reduced his stature to 9 or 10 hands only, his swiftness and, inevitably, his social standing, which is a great pity. But the inherent donkey virtues of sublime patience, calmness, hardiness, endurance and loyalty remain unchanged. "Thy servant the ass" is a very loyal fellow, far more reliable in an emergency than the much flightier horse, than whom he is much more sure-footed and stronger for his size.

Where he has a reputation for stupidity and stubbornness this is nearly always traceable to bad management and environment, or to direct cruelty. Few animals are so superhumanly patient; the very way a donkey stands, head bowed, feet squared, gigantic ears erect, only the tail in motion, is indicative of this.

In the lands where he is better appreciated, a good donkey is invariably placed at the head of a pack-train on desert or mountain track, for his intelligence in picking a safe route and in leading the other animals along it is unmatched. Even among today's seaside donkeys, carrying children for rides along the sands, there can be observed a trace of this; there will always be a leader in the team, and no other donkey will move until the leader is in the front position.

Donkeys—a term, by the way, of very recent origin in the animal's history, dating back only about 150 years or so—habitually live longer than horses, but rarely to the extent of legendary belief. Specimens of 25 or so are common, with perhaps about 30 years as a normal span, but one well-authenticated donkey lived to be 47, and another died in 1937 at, we are told, the age of 86. Some of the longer records are probably unreliable, since donkey births are so rarely recorded. Indeed, in most countries of Europe today, with the exception of Spain and Ireland, donkey births themselves are growing ever rarer, partly owing to the extreme shortage of jacks for breeding.

The donkey differs from the horse in other ways. It has, for instance, a relatively much larger skull, narrower hoofs, and an ability to get by with far less sleep. Indeed, unless he is very weary through overwork, an ass will seldom lie down to sleep. He can work hard and live long on the poorest food, preferring coarse herbage such as thistles and plantains, but if donkeys are to be bred for large size and good speed, they do require good food, a fact long overlooked by donkey-owners in the temperate lands. Here, too, the animal is normally smaller, due partly to the cooler climate than that from which his forbears sprang.

The donkey's liking for dust, and his hatred of mud and wet in his path, seem to suggest a desert ancestry. It is also a fact that donkeys will breed with zebras, although the black stripes down the back, and sometimes round the legs as well, are traditionally regarded as reminders of the donkey's finest hour when he bore Christ on His entry into Jerusalem on Palm Sunday. Incidentally, the choice of an ass for this journey was not, as is so often supposed, a sign of humility in the use of a humble beast of burden. This was a triumphal ride, and at that time the donkey was the appropriate mount.

Want Little to Drink

One thing only all donkeys insist upon—the cleanest water. They require very little to drink, even when working in hot lands, but will touch nothing but the purest water. At one stage in the animal's chequered career, about 100 years ago, they were bred in Britain solely for their milk which is rich in sugar and low in butter content, and as such, useful for the stomachs of sickly children and the very old. There were even donkey dairies in London, with sales of fresh warm asses' milk at four shillings a quart—the animals being milked at your doorstep.

The donkey has been called many things in its time, not all of them complimentary—grass-lion, Jerusalem pony, the devil's walking parody on all four-footed things, the asinine one—while people have annexed its name as a synonym for fools. But the donkey itself remains, patient and sober, long-suffering and often misunderstood, a very neglected servant of man.

Of General Interest

Recording Changes In Speed

AN instrument that detects and records changes in a vehicle's speed occurring in a thousandth part of a second has been designed by engineers at the Thornton (Cheshire) Research Centre of Shell Research Limited. The need for an accelerometer of this sensitivity became apparent during studies into the comparative performances of various motor fuels. The new instrument developed can measure the acceleration of the vehicle itself or the acceleration of the engine, which are not necessarily identical.

To measure the acceleration of the car a fifth wheel—a bicycle wheel attached to the rear bumper—is used. The time for each revolution of this extra wheel—only a few thousandths of a second—is automatically measured by the accelerometer and recorded on a paper tape. From this tape it is a simple matter to calculate the change of speed or acceleration.

When the engineers are measuring the acceleration of the engine, they connect the accelerometer electrically to the contact breaker of the car's distributor. The tape then records the time, in milliseconds, of each revolution of the engine.

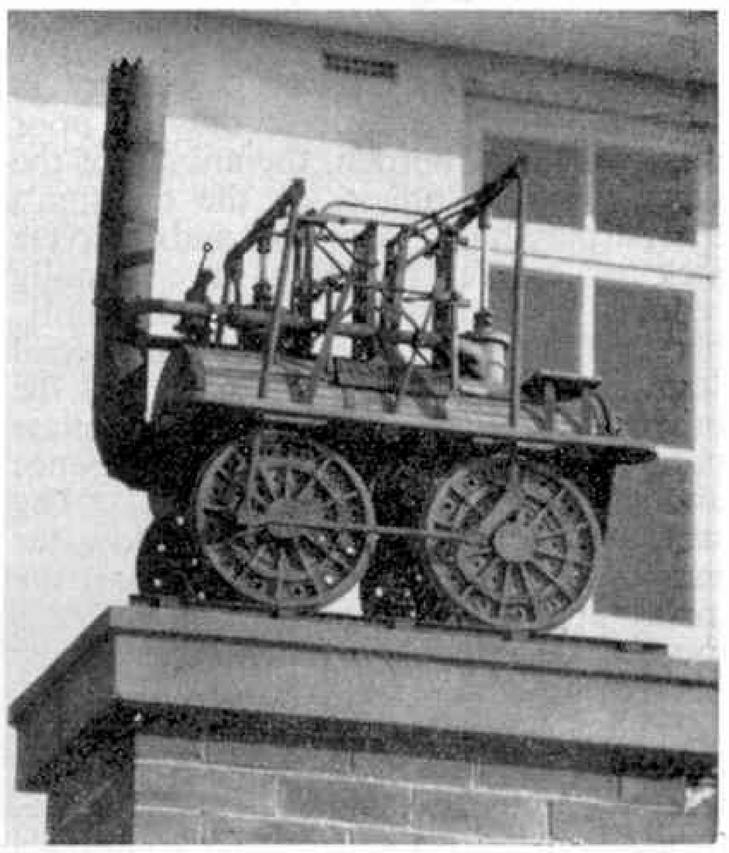
The new device that measures acceleration. This picture, reproduced by courtesy of the Shell Research Centre, clearly shows the fifth wheel which is such an important part of the apparatus.

NO ROPES FOR THESE BELLS

When, on Sunday mornings, you hear the church bells ring, you usually think of them as being rung by means of ropes. But there is one church in England where the bells are rung by a vastly different method, writes M.M. *reader Holmes L. Hall of Dovercliffe, Essex. In the little Suffolk village of East Bergholt, made famous by John Constable, the landscape painter, the bells are not situated in the church steeple or tower, but in a wooden building, away from the church, which is called the bell cage. It is square in shape as you can see from the picture below and is made from old timbers, some of which have come from ships. In it are five bells which were made over a period of nearly 500 years. The oldest is dated 1450; the next oldest was cast in 1601 and the remaining three are from the sixteenth, seventeenth and eighteenth centuries.*

The usual method of ringing bells is by having ropes attached to them, the bells hanging with their open mouths downwards. But at East Bergholt no ropes are used, and the bells have their mouths pointing upwards. Each bell is fixed to a large wooden stock and beneath the bell is a pit in which the ringer stands. (Cont. on page 149)

The bell cage at East Bergholt.



There are many types of hotel and inn signs to be found all over the English countryside. This beautiful model of an early locomotive is outside the Iron Horse Hotel at Newton Aycliffe, Co. Durham. It depicts the famous "Locomotion" which was built by George Stephenson and was used to haul the train at the opening of the Stockton and Darlington Railway on September 27, 1825. The picture and details are supplied by *M.M.* reader J. Denton Robinson, of Darlington.

MAKING EASTER EGGS

By GERALDINE MELLOR

IT'S tremendous fun to visit a chocolate factory and watch the employees making those delicious paste eggs we all like to eat at Eastertime. But such a visit must be managed quite a while before Easter Day for, believe it or not, most of these firms begin manufacturing their eggs early in January.

Incidentally, by using only the highest quality ingredients manufacturers are able to safeguard these sweetmeats against early deterioration since, naturally, the goods do not reach the consumer until March or April.

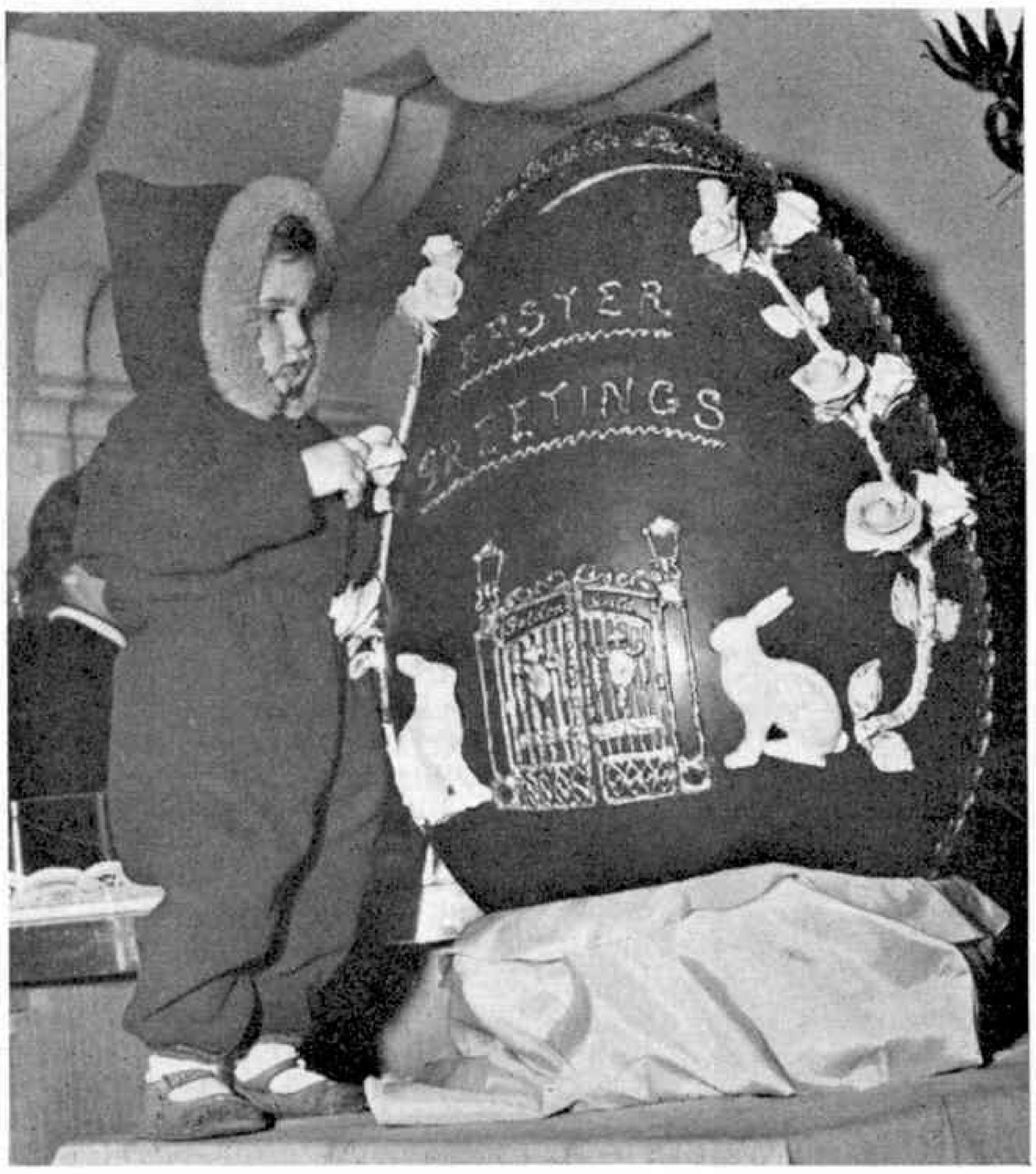
Generally, Easter egg chocolate is a special moulding paste with a lower cacao butter content than the coating type, and thus the chocolate adheres more satisfactorily to the hollow metal egg shapes on which it is formed.

Slabs of chocolate are first broken up, then dropped into steam–water-jacketed kettles where the mass of paste is continuously stirred while being treated. A melting temperature of 140 degrees F. may be achieved, and, in any case, as soon as the egg maker observes that the chocolate is wholly melted, the degree of heat is immediately lowered to 95 degrees F. This level of temperature is held while the chocolate is drawn off for tempering, another chocolate kettle usually being employed for this latter process.

In tempering the paste, its temperature has to be lowered to 85 degrees F., then painstakingly brought up to 89 degrees F., at which point it is fit for filling into the egg moulds. Meanwhile, these metal shapes will have been brought to a degree of heat of not less than 79 degrees F. before they receive the tempered chocolate. Any temperature less than this makes the task of moulding an extremely arduous one.

It is quite a thrilling experience to see these moulds being filled. The egg fashioner pours the necessary amount of paste into each half (according to cost, but of adequate size to sustain handling), and when both halves are filled the two are clipped together, the whole being fixed in the spring clips of a gadget which carries the intriguing title of "whirling machine". In the space of a few minutes this fascinating mechanical device causes the inside surface of the entire shape to be covered with a level distribution of chocolate. Finally, the moulds are passed in their entirety through a cooling unit and then demoulded, and I noticed that the utmost concern is displayed over the handling of the completed sweetmeats.

"You see," explained one of the firm's employees to me, "any careless movement can easily mark a freshly-made chocolate Easter egg."



Here little Joan James, aged eighteen months, of Paddington, London, takes a close look at one of the biggest Easter eggs ever made. It stood more than 3 ft. high, was nearly 2 ft. in diameter and weighed over 40 lb. This giant Easter egg was presented to the Great Ormond Street Hospital for Sick Children, London.

Gabrielle Malone, aged three, of Kensington, London, with her outsize Easter egg, hurries down the street just in case an outraged ostrich should be after her!

Some candy factories go in for colourful decorations made of icing on their Easter eggs, to catch the eye of the customer and to charm him, so that he just cannot resist buying one of these dashing confections.

Perhaps you, filled with a healthy curiosity, have at one time or another fingered these embellishments on your egg, and have discovered—possibly to your surprise—that they do not break easily. The reason for this is quite simple: the icing contains some cream of tartar and a quantity of gum arabic solution, the former keeping the icing more plastic—thus making certain that it neither breaks nor crumbles—while the gum arabic preparation ensures that the icing sticks to the egg without breaking off.

Embellishments such as large roses, flowers, and the borders around the circumference of your Easter egg need a thicker icing, whereas a thinner solution is used in creating small leaves and flowers, or in writing names and drawing lines.

The skilled decorators whose task it is to embellish chocolate Easter eggs employ a baker's ornamental bag with tubes of assorted designs. For example, when they are placing borders on eggs, a star tube is attached to the end of the bag, which is half filled with icing. There are particular tubes for designing roses and other flowers, and for drawing animals and birds.

Perhaps your favourite Easter egg—like mine—is a cream-filled chocolate one, notwithstanding the fact that far fewer of these eggs are made here than in America. Most of England's cream-filled chocolate eggs which you see for sale before, and during, Easter are small ones, while America's are usually large specimens.

Invertase is used as an ingredient in cream-filled eggs because it not only acts as a softener, but also preserves the life of the cream centre.

You may wonder how long paste eggs have been in existence. (*Cont. on p. 174*)

Records... It's A Fight All The Way

AIR NEWS

By John W. R. Taylor

FOR many months America and Russia have been engaged in an all-out battle to see who can capture the most aviation records. The latest round has gone to America, whose pilots have raised the world air speed record above 1,600 m.p.h. and the helicopter speed record above 200 m.p.h. for the first time. But on the whole honours are about even, for Soviet airmen have set up several flying-boat and convertiplane records which may prove unbeatable for a year or two.

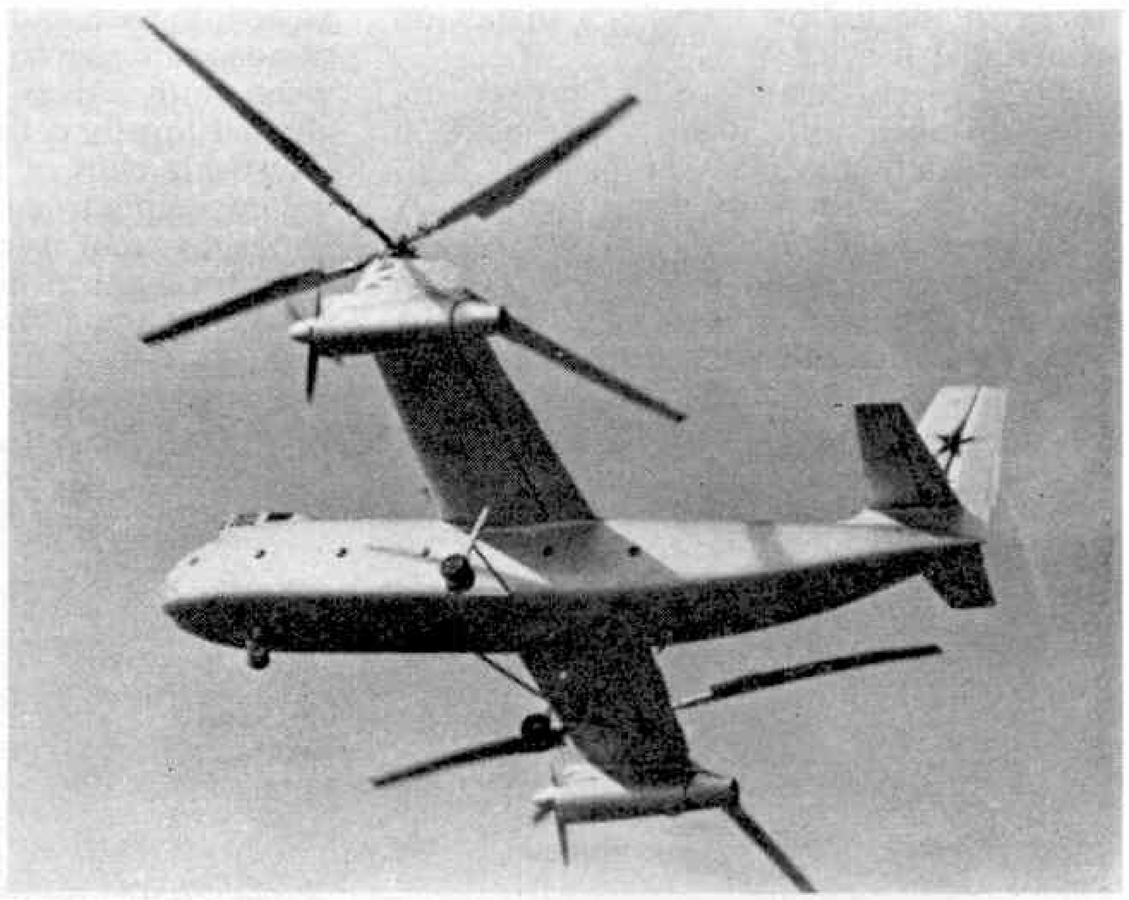
The new world air speed record of 1,606·324 m.p.h. (nearly two and a half times the speed of sound) was set up on November 22, 1961, by Lieutenant-Colonel Robert B. Robinson of the U.S. Marine Corps in a McDonnell Phantom II twin-jet naval fighter. Those people who see little value in record-breaking should note that the U.S.A.F. has since decided to order the Phantom for use as a reconnaissance-fighter, with the designation RF–110. This is a great achievement for McDonnell's design team, for naval aircraft have to carry so much extra equipment they can seldom outdo their land-based competitors.

Another record fell to the U.S. Navy in February, when a Sikorsky HSS–2 raised the helicopter speed record to 210·6 m.p.h. The only rotating-wing aircraft that has travelled faster than this is the Soviet Kamov convertiplane, illustrated on this page.

First seen during the great Aviation Day display at Tushino Airport, Moscow, last July, the Kamov machine is in much the same class as Britain's Westland Rotodyne. It takes off as a helicopter, with its two 5,622 h.p. Ivchenko shaft-turbine engines driving the side-by-side, four-blade rotors. As it begins to move forward, the fixed wings develop so much lift that the rotors can be de-clutched from the engines and left to windmill freely in the airflow. All the engine power can then be used to drive the forward-facing propellers, which accounts for the aircraft's high speed.

On October 12, 1961, it averaged 227·42 m.p.h. over a 9–15 mile course. This is of special interest, as it was believed a few years ago that rotating-wing aircraft would never be able to fly faster than 220 m.p.h. Nor is speed the only attraction of the Kamov convertiplane, for its cabin is large enough to carry about 80 passengers and there is a rear loading ramp for vehicles.

Russia's record-breaking flying-boat is the sweptwing Beriev M–10, powered by two 14,330 lb. thrust AL–7PB turbojets. Designed as a naval patrol bomber, this formidable craft has more than a dozen records to its credit, including a speed of 566·7 m.p.h. over a 9–15 mile course, and a height of 49,088 feet. During some of these flights it was carrying a payload of nearly fifteen tons.



The four-blade rotors and the forward-facing propellers of the Kamov convertiplane are seen clearly in the picture on the right.

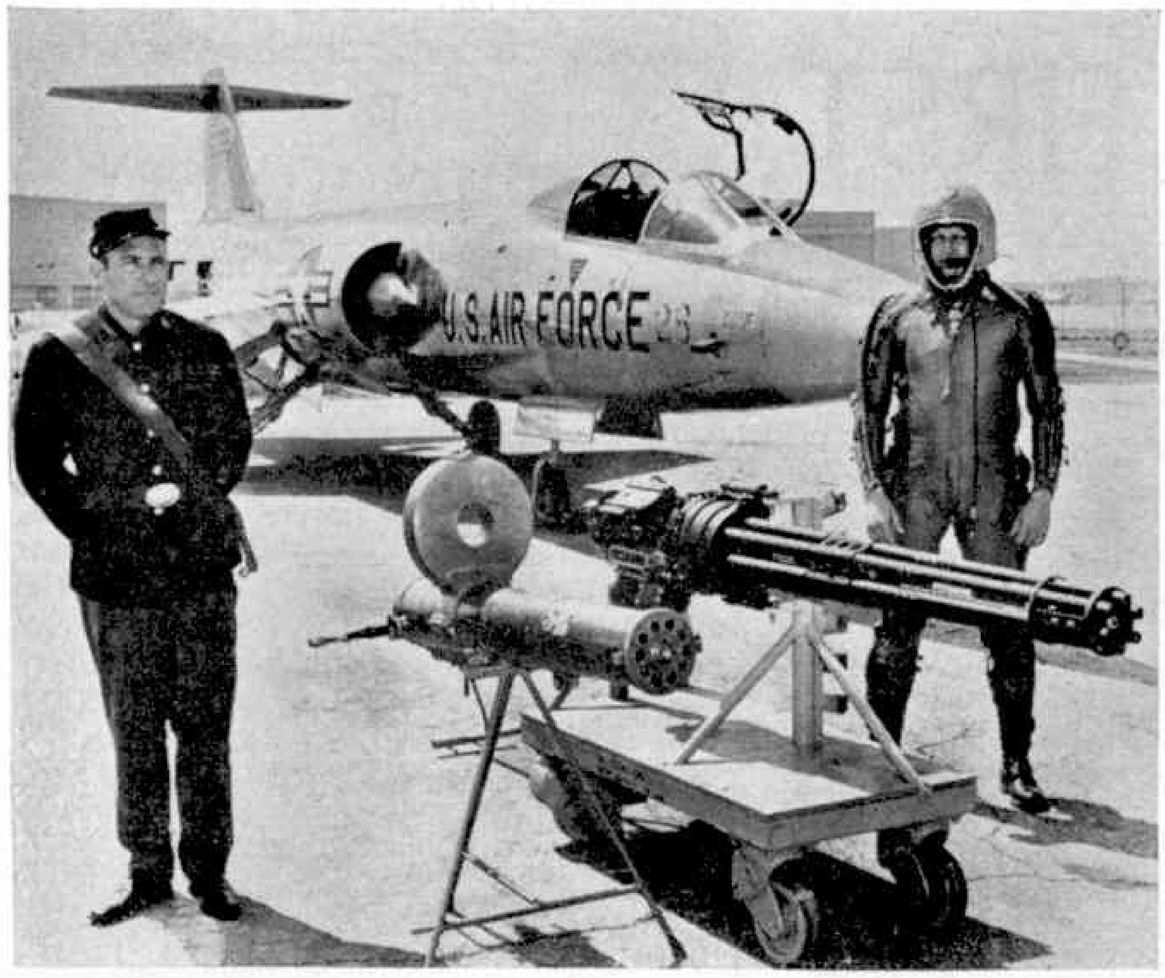
In the photograph below Russia's four-jet delta-wing bomber "Bounder" is seen over Tushino airfield, accompanied by fighters.

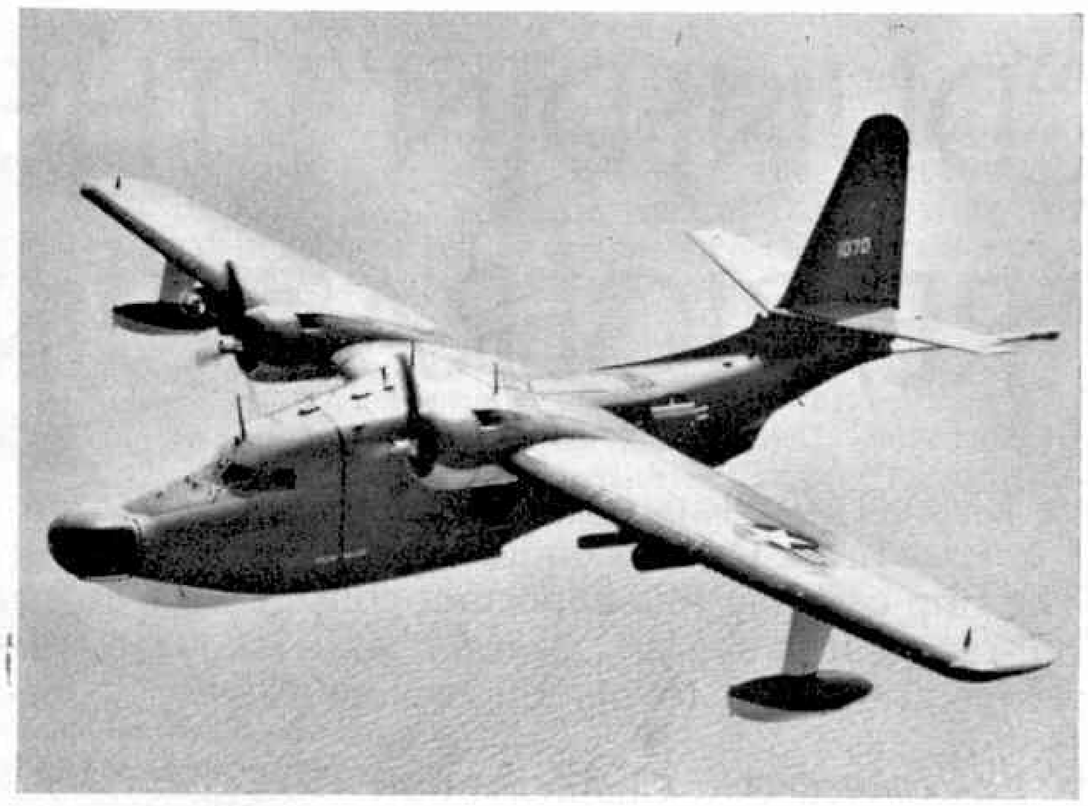
WORLD'S BIGGEST DELTA

Another of the new Russian aircraft seen for the first time at Tushino last July, the four-jet delta-wing bomber illustrated in the bottom picture on this page, holds the record for size rather than speed as it is the world's biggest delta.

We know very little about it, but the Russians claim that it will fly at supersonic speed, and it was probably designed by V. M. Myasishchev. By comparing it with the MiG delta-wing fighters which escorted it at Tushino, we can estimate that it has a span of about 90 feet and is 180 feet long. The four engines, mounted in pods under the wings and on the wingtips, are thought to be Type D–15 turbojets, each developing 28,660 lb. thrust.

The code-name given to this aircraft by NATO is "Bounder", the initial letter





Left: Contrast over a century in the fighting man and his weapons (see "A Hundred Years On"). Above: The Grumman Albatross which has now been developed as an anti-submarine aircraft.

"B" indicating that it is a bomber. However, Mr. Krushchev has said that Russia will rely on rockets instead of long-range bombers in future, and only one "Bounder" was seen at Tushino. So it might play its most important role as a prototype for Russia's first supersonic airliner.

SUPER CARAVELLE

Because of experience gained with "Bounder", the Soviet Union might be the first country to fly a supersonic airliner, but Britain, France and America should not be far behind.

Only France has so far announced plans to build such an aircraft. Named the Super Caravelle, it will be a sharply-swept delta-wing machine, able to carry 100 passengers on 2,800-mile stages at 1,450 m.p.h. (2·2 times the speed of sound). The prototype will fly in 1965 and production models could be in service by 1968.

The French Sud-Aviation and Dassault companies have kept in close touch with the British Aircraft Corporation while working on design studies for the Super Caravelle. As a result, if our Government decides to finance development of a British-built supersonic airliner this will have the same basic airframe as the Super Caravelle, which will save everyone a lot of money. It will also help our aero-engine industry as, in these circumstances, a civil version of the Bristol Siddeley Olympus turbojet would almost certainly be chosen to power both the French and British airliners.

At the present time, the Olympus is the only engine in the western world capable of giving 33,000 lb. thrust with reheat in a form that could be adapted easily for airline use. Only four engines of this size would be needed. The main difference between the airliners would be that the British machine would carry fewer passengers and more fuel than the medium-range Super Caravelle, so that it could operate on the London–New York route.

JET-AGE PANORAMAS

Like me, you may have wondered just how far you can see when looking out of the window of a high-flying airliner. According to United Air Lines, on a clear day you can see thirteen miles at a height of 100 feet, 100 miles at 5,000 feet, 160 miles at 20,000 feet and 250 miles at 40,000 feet. But to see clearly the curvature of the Earth you have to become a spaceman and look down from a height of 100 miles or more.

FILIGREE FORTRESS

A new film called *The War Lover*, now being shot in Britain, will contain some of the most realistic flying scenes ever photographed. It tells the story of an American wartime bomber unit flying B–17 Fortresses, and three surviving B–17s were flown over to England and painted in full World War II insignia specially for the picture.

In one scene, a Fortress returns from a raid badly shot up, so the studio technicians had to get busy with hammers and hacksaws. By the time they had finished, the aircraft looked in such a sorry state, complete with one smashed propeller, that an Air Registration Board inspector commented, "That should make some very impressive ground shots." He nearly had heart failure shortly afterwards when he saw the wreck staggering into the air on three engines, so that it could be filmed over the Channel with black smoke pouring from it.

The pilot responsible for the flying in *The War Lover* is Captain John Crewdson whose company, Film Aviation Services, has ensured realism in many of the aviation films made since the war.

A GENTLE WARNING

When something goes wrong with a supersonic bomber like the B–58 Hustler, it can happen so quickly that the usual flashing red light, buzzer or bell warning systems are not good enough. Even if the pilot spots the light or hears the buzzer, he still has to work out exactly what is amiss.

To eliminate the time lag, Northrop's Nortronics Division has produced an electronic warning device known as VIPS (Voice Interruption Priority System) which uses tape-recorded messages to alert the aircrew in an emergency. A woman's voice is used, to provide instant contrast between warnings and the normal conversations of the crew, and all messages begin with a different word.

VIPS has already saved a B–58 during flight tests of the warning system. While returning to base in rapidly worsening weather, its pilot heard a woman's clear calm voice say, "Left manifold pressure low", followed by "Alternator failure" and then "Hydraulic pump failure". He took corrective action soon enough to avoid an almost certain crash.

ANTI-SUBMARINE ALBATROSS

For many years the U.S.A.F.'s air-sea rescue Grumman Albatross amphibians have been bringing much-needed help to ditched airmen and shipwrecked sailors. Now this fine little aircraft has been developed in a form designed to deal with the sailor's greatest wartime enemy, the submarine.

Most anti-submarine aircraft are too big, costly and complex for operation by the air forces of small countries. The new version of the Albatross, illustrated above, overcomes this problem. Ordered originally for the Royal Norwegian Air Force,

(*Continued on page 174*)

"DUNEDIN", THE FIRST REFRIGERATION SHIP

By
GORDON WOOSEY

ALMOST 80 years ago, the first cargo of frozen meat arrived at the East India Dock, London after a 98-day voyage from New Zealand. The ship carrying this important consignment of frozen carcases was the full-rigged iron barque *Dunedin*, of 1,320 tons gross. She was the first refrigeration ship to ply the waters between New Zealand and Great Britain.

Dunedin left Port Chalmers, Port of Dunedin in South Island, on February 15, 1882, captained by John Whitson. On this momentous journey *Dunedin* carried a cargo of 4,660 carcases of mutton, 449 carcases of lamb and 22 carcases of pork. Had it not been for the crankshaft breaking just before she was due to sail there would have been 60 passengers, too. This unfortunate mishap was the cause of all but two of them cancelling their passages.

Break in Crankshaft

The crankshaft had already given trouble when, on December 17, the loading began in the ship. This had to be abandoned four days later because of a break in the crankshaft of the refrigeration engine. Without any other means of keeping the cargo frozen there was no other alternative but to unload it. Thus the New Zealanders were the first to eat their frozen meat which had been intended for the people of Britain.

There was no further mechanical trouble and *Dunedin*, loaded again, eventually set sail, but there were moments of apprehension before she reached London on May 24, 1882. The refrigerator plant was worked by a steam engine which had a small funnel fitted amidships between the foremast and mainmast. Sparks from this funnel set fire to the great sails of the barque on several occasions, and only prompt action by the crew prevented these bursts of flame from turning the ship into an inferno.

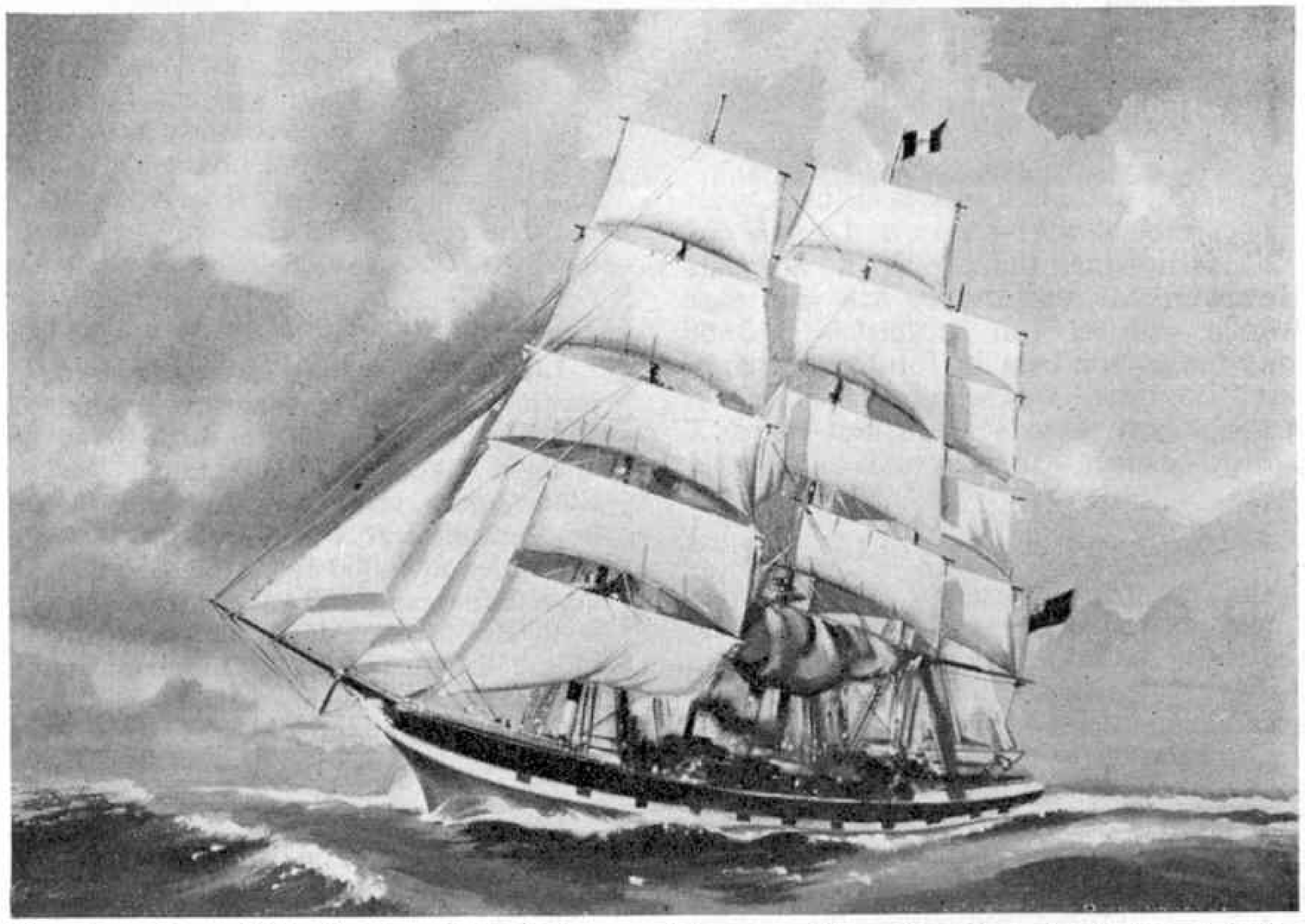
A second source of worry was the temperature of the freight, which almost cost the master his life. While the *Dunedin* was in the tropics she had to remain on the same tack for long periods at a time, and this prevented the cold air from circulating among the carcases. To have opened the hatches would have resulted in the whole of the cargo being thawed.

Saved Captain's Life

The captain decided to crawl through the ventilating ducts to cut fresh openings, to allow the cold air to make a better escape. In carrying out this task he became frozen stiff and only the quick action of the mate saved his life. Crawling in behind the captain he tied a rope to his legs and had him hauled out by members of the crew.

This voyage, which was slow even in those days, nevertheless proved to be of great consequence to the future of New Zealand as a great meat exporting country.

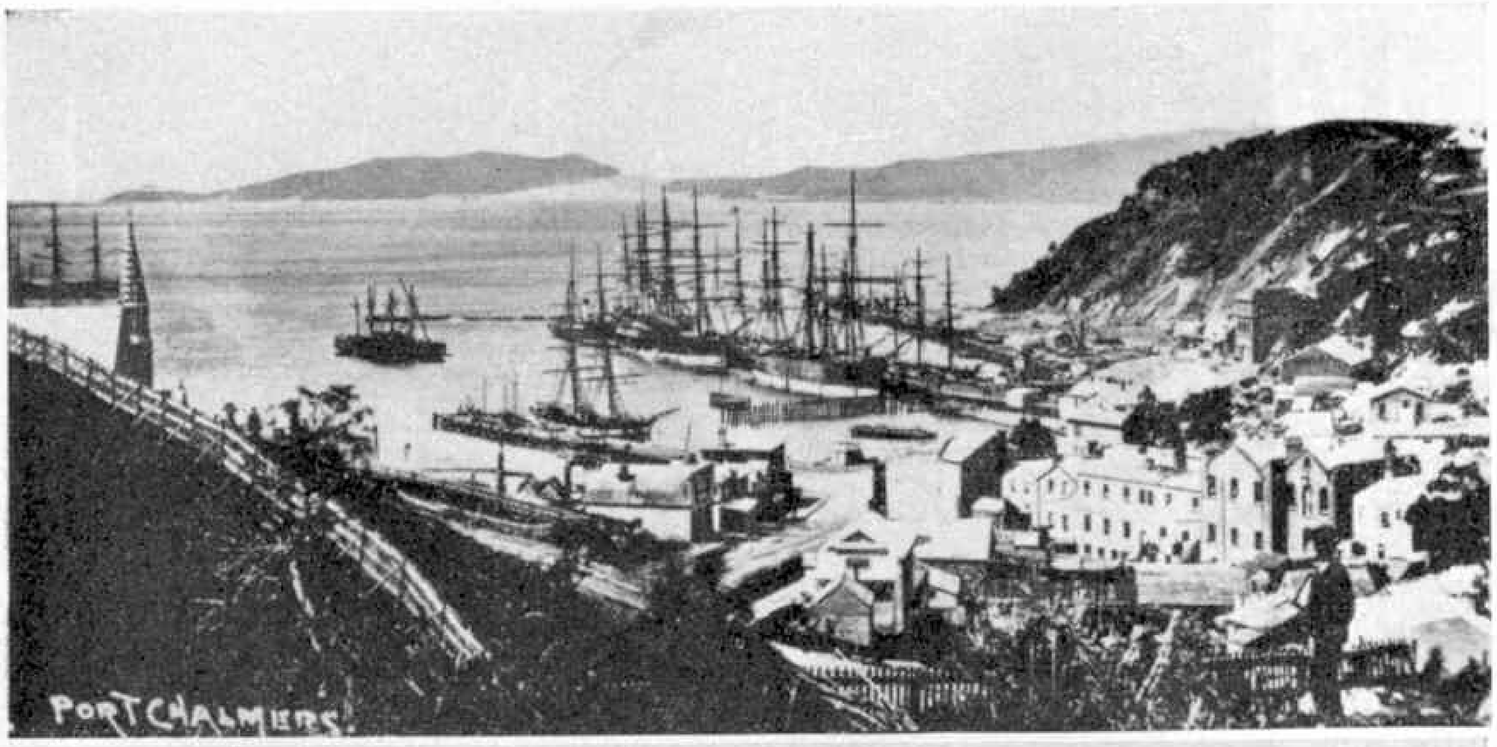
Although this first cargo of frozen meat reached London on May 24, New Zealanders celebrated the 75th anniversary of the event, in 1957, on February 15—the day the cargo left their country, and to commemorate the anniversary the New Zealand Post Office issued two stamps. One is a vertical 4d. showing a New Zealand lamb across a map of the dominion, with the words "75th Anniversary, New Zealand Lamb Export Industry 1882-1957"; the other, valued at 8d., is a horizontal stamp the design of which includes the *Dunedin*, a modern refrigeration ship and a New Zealand lamb.



The clipper "Dunedin", which brought the first cargo of frozen meat from New Zealand to Britain, in 1882. From a painting by Frank H. Mason, R.I., R.B.A. Illustration by courtesy of Shaw Savill & Albion Co. Ltd.

It was gratifying for the pioneers of the new venture in refrigeration that only one carcase out of a cargo of 5,131 had to be condemned on that important voyage. The whole consignment was sold within two weeks of its arrival in England.

To ensure that the meat reached Smithfield in a frozen condition the carcases were removed from the holds of the ship at night. The salesmen, who at first were rather doubtful about the condition of the product, soon had their minds put at ease. The official report to New Zealand said the salesmen's early doubts were quickly dispelled when they saw the fine, big carcases which, although they had been frozen for more than four months, were still as clean as those of newly-killed mutton. In London, the meat was sold at an average of 6½d. per pound, and the same price was brought for the 400 animals that were sent to Glasgow.



Port Chalmers, port of Dunedin in South Island, New Zealand. The top picture shows the port as it was in the days of the clipper-ships. Illustration from the book "The Port of Otago" by A. H. McLintock, and reproduced by courtesy of the publishers, Whitcombe and Tombs Ltd. (Bottom) Port Chalmers as it appears today, at the peak of the overseas shipping season. Berthed at the wharves are the "Rangitane", "Coptic", "Empire Star" and "Durham". Photograph by courtesy of the New Zealand Government.

So pleased was the New Zealand Government with the result that it granted a bonus of £500 to the company which chartered the *Dunedin*—the New Zealand and Australian Lamb Company. This company, quick to see the future possibilities of frozen meat being transported to distant countries, engaged the service of another sailing ship, the *Marlborough*, and soon other companies and countries took up the transportation of frozen consignments to all parts of the world. Unhappily, in 1890, after nine voyages the *Dunedin* was lost at sea, a fate which also befell the *Marlborough*.

Fifty years after the first shipment nearly 213 million carcases had been shipped, and the current export rate is about 10,000,000 carcases of lamb and mutton each year.

Millions More Sheep

Before the advent of refrigeration in ships the sheep population of New Zealand was 13,000,000; today the country ranks as one of the world's greatest exporters of meat and has a population of more than 40,000,000 sheep. A record season which ended on September 30, 1956 revealed that New Zealand had exported 16,752,061 carcases of lamb and mutton besides beef and pork, of which more than four-fifths went to Britain.

There are now over one hundred voyages made each year by refrigeration ships travelling between New Zealand and Great Britain. In addition to bringing frozen meat, these modern ships also carry butter, cheese and other important products. Before the coming of refrigeration to New Zealand she was faced with the problem of having more sheep than her sparse population could manage. Now she earns some £60,000,000 a year from meat exports. By developing dual purpose sheep she has remained the world's second greatest exporter of wool, which is her most valuable single export.

Solved Food Problem

Refrigeration, too, solved Britain's food problem during the latter part of last century, when a quickly-growing population had to be adequately fed. Frozen meat and foodstuffs from New Zealand and Australia proved of the greatest consequence to Britain's millions during the two world wars, when a regular supply of frozen foodstuffs from these two faithful dominions proved vital to her everyday needs, helping her not only to survive, but to march on to victory.

Road and Track—

(*Continued from page 141*)

more than when the standard Mini-Minor or Austin-Seven is braked from 60 m.p.h. Furthermore, special Dunlop tyres, with a nylon casing, have been developed to match the performance of the Cooper-Minis.

It all adds up to remarkable performance, with safety, and there is no doubt that the B.M.C. engineers, in conjunction with the Cooper Car Company, have provided a standard of travel that was previously the province only of highly-priced sports saloons. You can see Mini-Coopers in action at Goodwood on Easter Monday.

"KEYPARK"

Any move to improve car parking facilities in urban areas is a welcome one, particularly when it is realised that by 1970 there will be 12,000,000 cars using the already congested roads of this country. I have been most impressed by the principle of the new "Keypark" automatic car park, requiring no attendant, which is an easily-installed parking system for an area with a minimum of 25 square feet.

The "Keypark" consists of twelve storeys, with a total parking capacity for 24 cars, arranged on each side of a high-speed lift. This module concept, 120 feet high, is extremely flexible both in operation and installation. Whatever the individual parking problem, the single "Keypark" module standard unit is simply duplicated. Single or multiple units can be arranged side by side, in echelon or back to back.

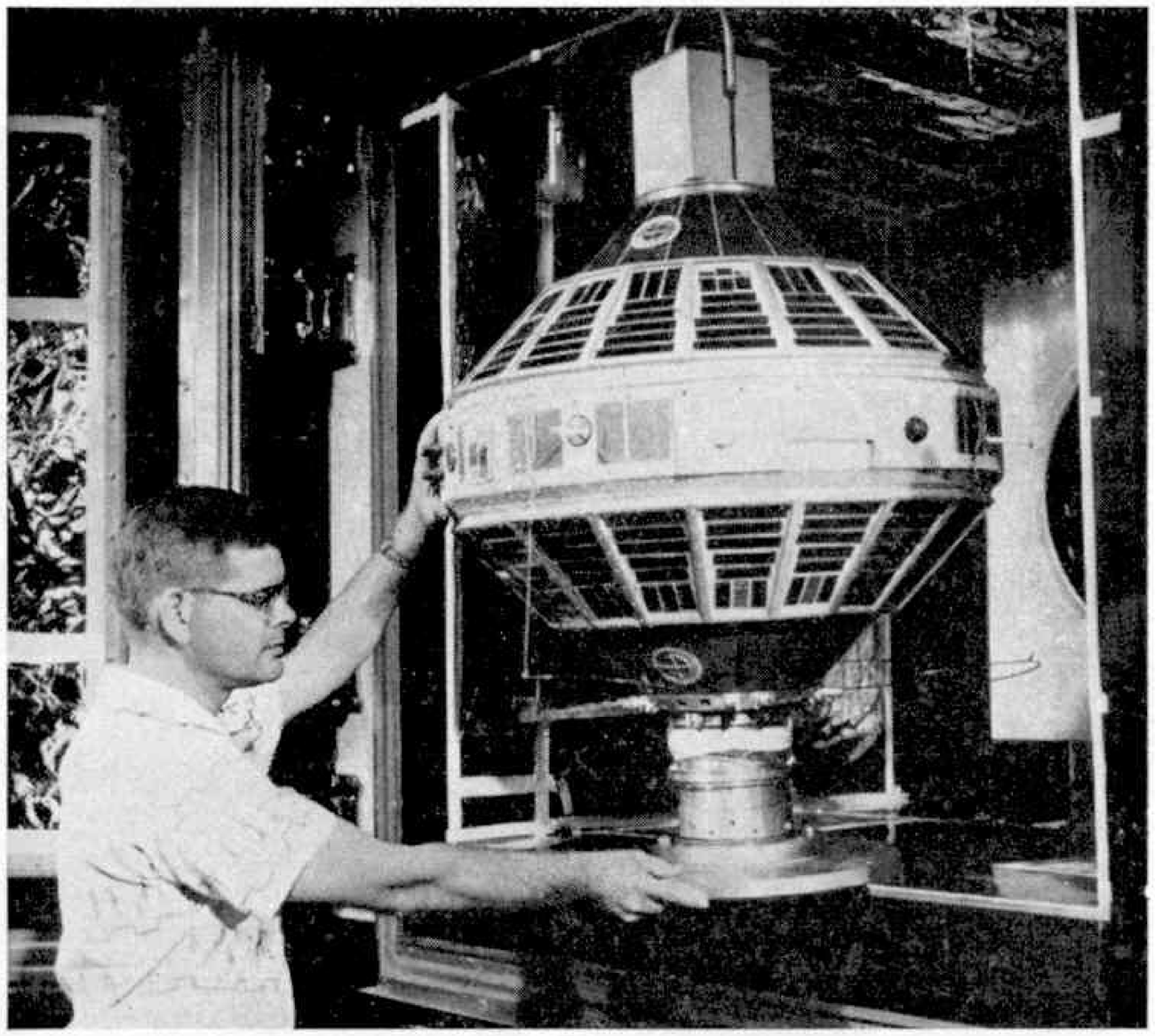
Parking is simple. The car is driven on to the lifting platform and the parking charge inserted into the fully automatic electro-mechanical control console. The driver turns a pre-indicated key, the presence of which confirms an available bay in the module. The key is turned to the "parking" position, which initiates the parking operation, and the key is then retained by the customer. The lift carries the pallet and its car to the appropriate floor where both are moved sideways into the empty bay. To obtain the return of a car, the key is re-inserted and turned to the delivery position. This brings the car back automatically to the ground floor.

Of General Interest—

(*Continued from page 144*)

The ringer pulls at the stock on which the bell is fixed, and the bell then turns through a full circle, ringing as it goes. The bell ringer grasps at the stock as it moves past to give it further impetus for the next round. It is quite a hazardous business ringing these bells, for they pass within a foot or two of the ringer when they are swinging. No one but the ringers themselves are allowed in the cage when the ringing is taking place.

SOLAR POWER FOR EARTH AND SPACE



This Explorer VII satellite has 2,866 solar cells which change sunlight to five watts of electrical current. Photograph by courtesy of the U.S. Information Service.

By R. J. SALTER

SO tremendous is the power released by a nuclear or atomic blast it is a great tribute to the skill of engineers and scientists that they have safely harnessed nuclear energy to generate electricity.

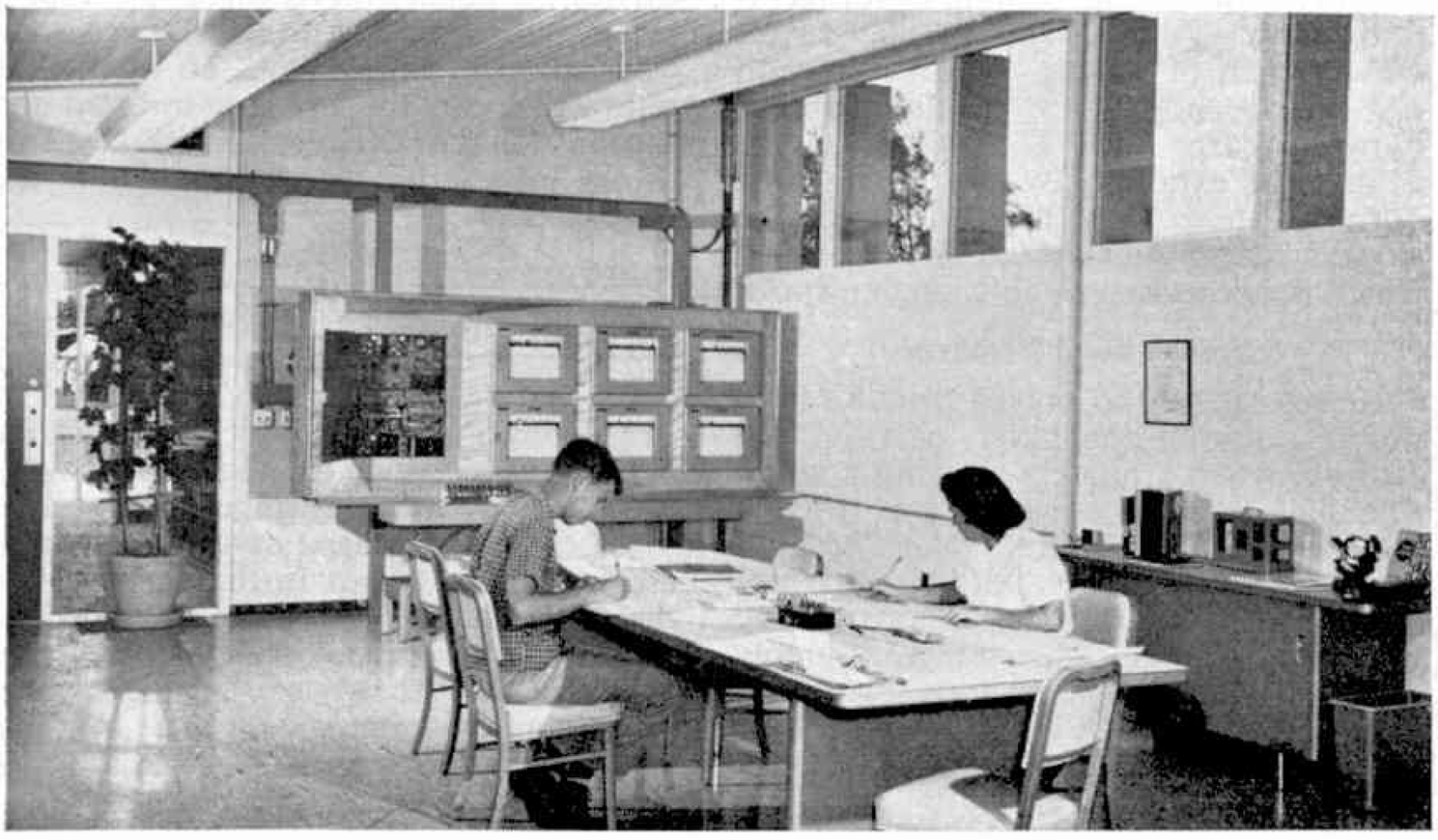
After a nuclear explosion, columns of vapour rise up through the atmosphere and into the stratosphere. Yet, these demonstrations of power are very small compared with the disturbances which take place within the sun. Photographs have revealed that the sun shoots columns of vapour out from its surface for millions of miles into space.

Scientists tell us that the sun is a large hydrogen reactor which is so well balanced that it has given off energy at the present rate for at least two billion years.

From the hot core of the sun is radiated solar energy. Situated as we are, on earth, some 93,000,000 miles from the sun's reactor we receive only about two-billionth of the total solar radiation which the sun gives out.

Solar energy gives the earth both light and heat. It reaches us by waves which are similar in many ways to wireless and television waves. Just as these waves have different wavelengths, so do the waves of solar energy. Some of these waves arrive as infra-red rays and others as ultra-violet rays. If all the solar radiation reaching the earth could be changed into electrical energy the earth would receive 120,000,000,000,000 kilowatt-hours of electricity every year. It has been calculated that if the solar radiation falling on to a 100-mile square of the Arizona Desert could be used it would operate the whole of the industrial plants of the U.S.A.

In this picture students of the University of Arizona are working in the control room of a solar-heated building. The control panels for heating and cooling can be seen at the far end of the room.



Inventors realised this long ago and many "sun machines" have been invented through the years. Many were ingenious and cleverly thought out, but not until fairly recently has man been able to use the sun's radiation in a satisfactory manner.

There are many ways in which the heat and light of the sun can be utilised. Every schoolboy has used one of these methods —by focusing the sun's rays through a magnifying glass to produce a "hot spot", paper or grass can be set on fire. On a larger scale, scientists have built solar furnaces which reach such high temperatures that they can melt metals in a few moments.

* * * *

Solar batteries used to give power to the wireless equipment in satellites and space craft change the sun's rays directly to electricity. This is made possible because some materials, such as silicon, give out a weak electric current when sunshine falls on them. A single silicon cell only gives a very small current, but when very many of them are connected together there is enough power to work a radio transmitter.

Nature changes sunlight to energy, too; it is taking place all through the summer in the leaves of trees. This is the natural phenomenon known as photo-synthesis which accounts for all plant growth. Chlorophyll, found in all green plants, uses solar radiation to change the carbon dioxide of the atmosphere to carbo-hydrates and oxygen.

Another way is to trap the heat of the sun without concentrating it on to a single spot. Sunlight falls on large metal plates which soon become warm. Water is passed through the tubes behind the plates and soon the water is warmed. This idea has been used to heat houses, and at Ye Olde Felbridge Hotel, East Grinstead, in Sussex, the proprietor has built an outdoor swimming pool which uses solar energy to heat the water.

A vital element in this method of trapping heat from the sun is the solar collector. At Ye Olde Felbridge Hotel, the collector is inclined at 60 degrees to the horizontal and faces (*Cont. on page 174*)

PICTORIAL SURVEY
By JOHN TOPHAM

RANCHING IN SCOTLAND

SOME thirteen years ago, Mr. J. W. Hobbs, who is Hampshire born, started a cattle ranch near Fort William, in Inverness-shire, after experience in Canada. Acquiring the Inverlochie Estate of about 10,000 acres he set to work to raise cattle on Canadian standards, but first had to convert the bracken hillsides and the heather plains into arable land—and he commenced with 30 acres. Today that area has increased to 1,200 acres, and still more land is being reclaimed as each year passes. Of the original 10,000 acres, some 3,000 are rented to crofters.

To protect the stock in winter cattle shelters have been erected but these have seldom been required except for weakly cattle, and plans to increase the number of shelters have been shelved. The estate carries well over 1,000 head of cattle and fourteen men are normally employed on the various farms, the cattle foreman being Mr. John Cameron, who has been there from the start. Included in the stock are 24 shorthorn and Aberdeen Angus bulls, all of which are thoroughbreds. Calves sold off the range to date total more than 4,500. In addition, one season's production of silage totalled 3,800 tons, 40 acres of oats were harvested and 200 tons of hay made.

The Inverlochie experiment has created much interest in farming circles, and the efficient way in which it is operated has become a byword among those who have had the opportunity of seeing this novel Scottish ranch.

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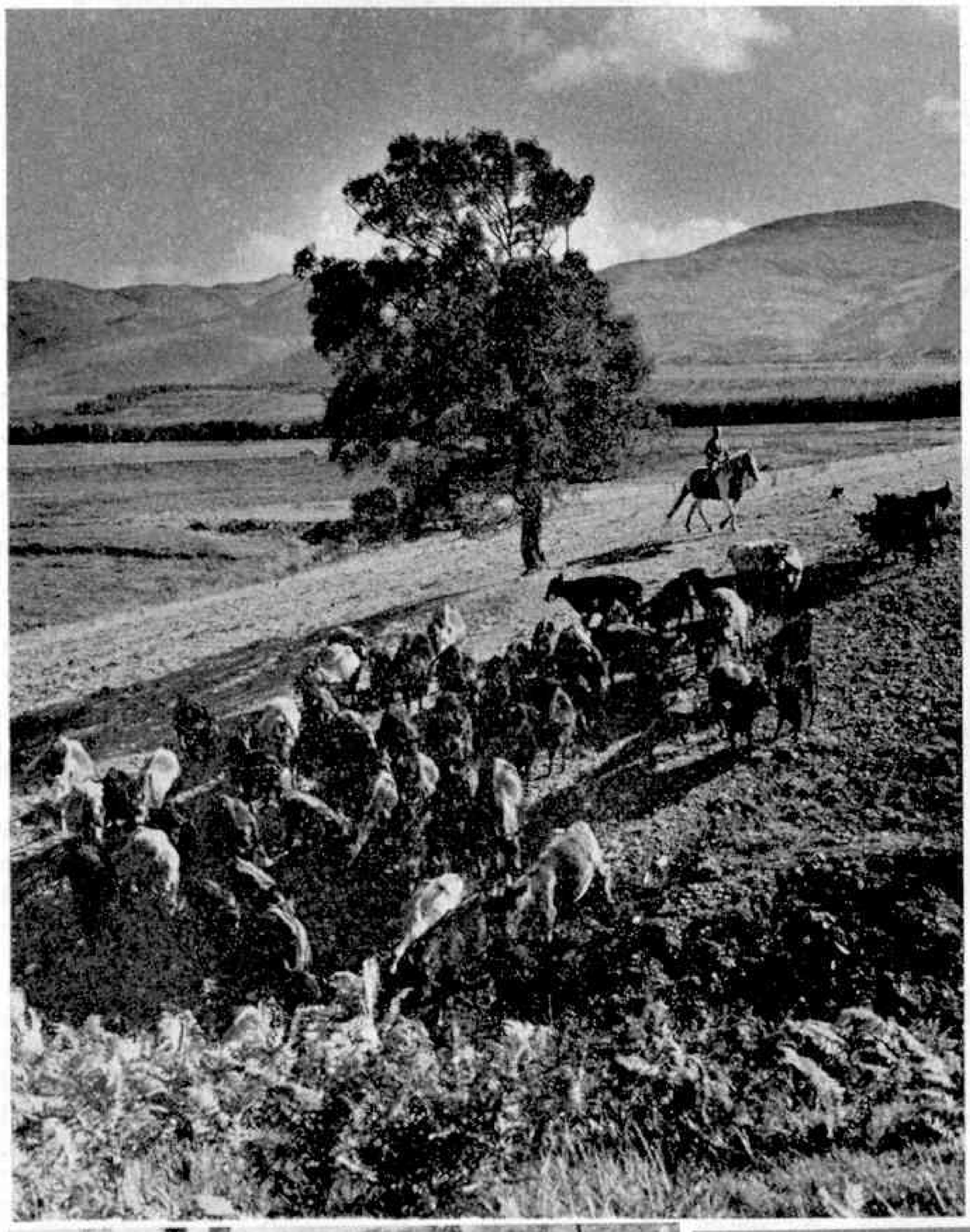
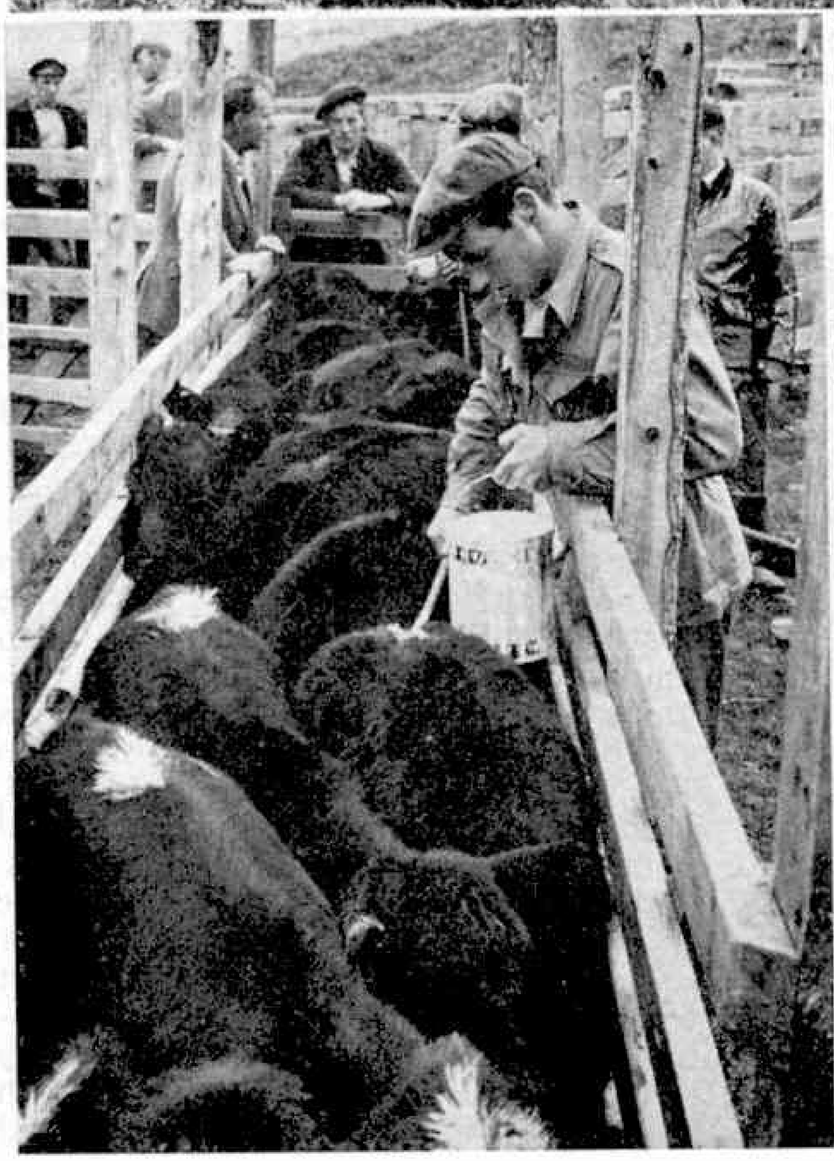
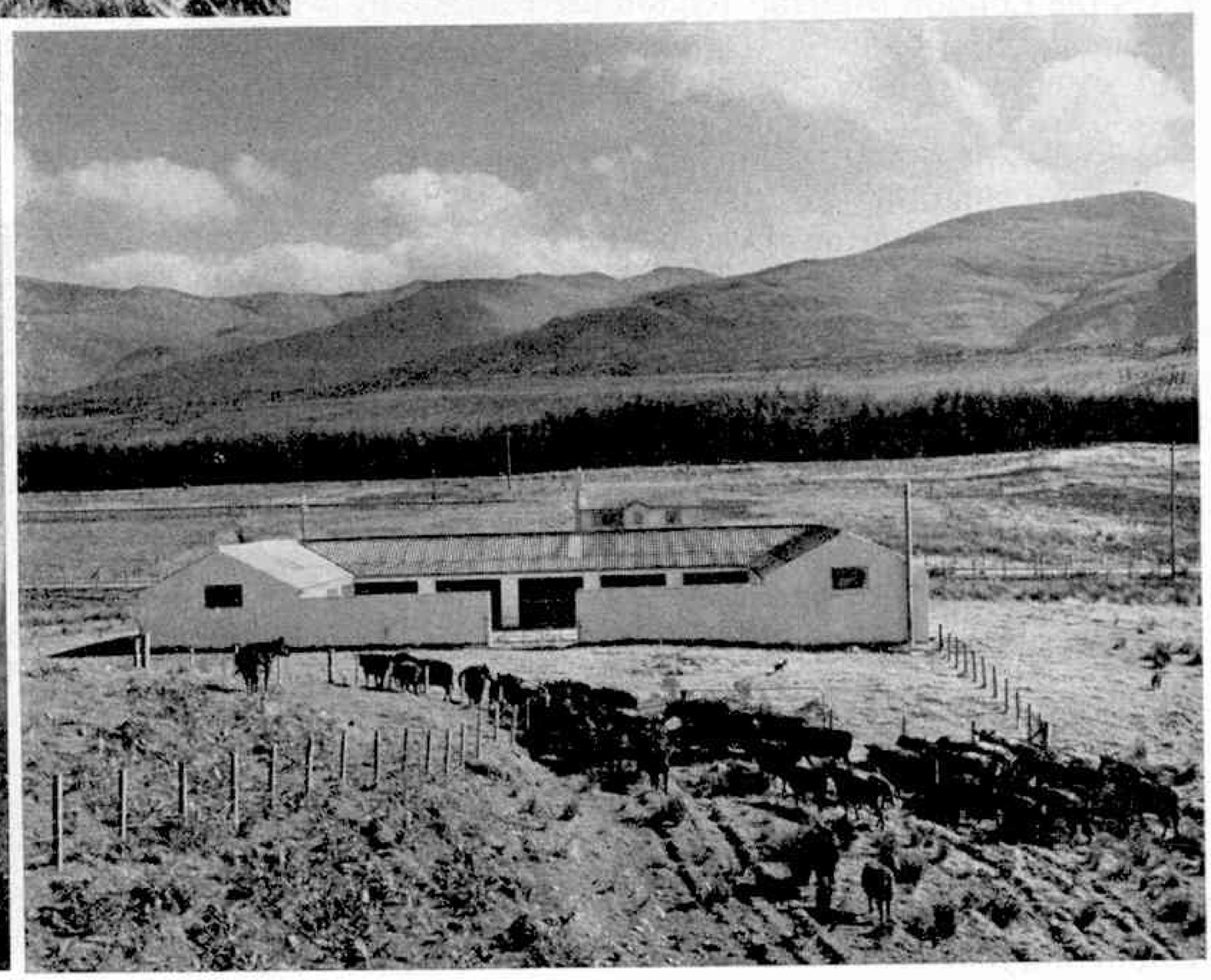


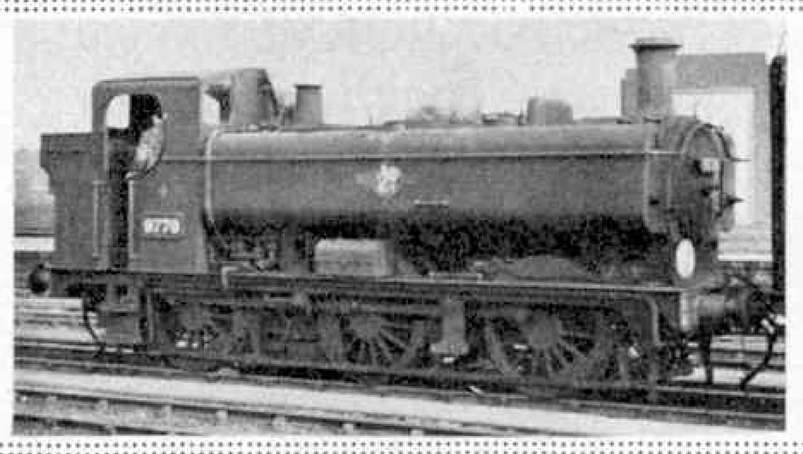


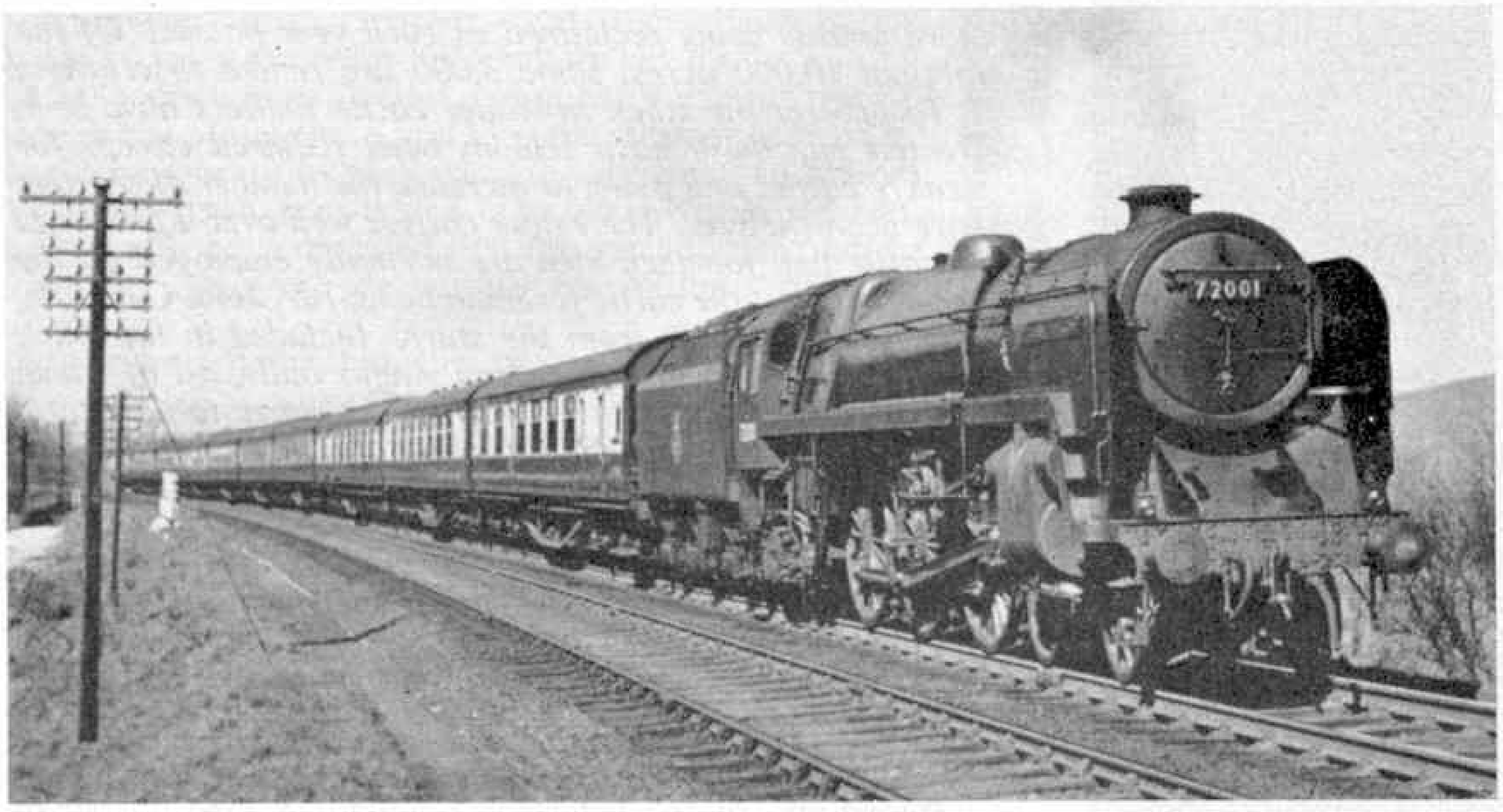


Round-up—at the Inverlochie ranch! A lone horseman with two dogs to aid him is seen (top picture) driving a herd over the wide acres of the estate. In the smaller picture below a livestock inspector (left background) is seen inspecting the calves during marking on one of the farms. The remaining photograph shows a view looking south over one of the cattle shelters that have been erected on the ranch. The Ben Nevis range is to the right of the picture.

RAILWAY NOTES

Contributed by R. A. H. Weight





Around The London Midland Region

ON the London Midland Region there are many evidences of advancing modernisation in the way of structural rebuilding, track improvements and extensions, and better passenger accommodation and service on various routes. Some schemes have reached, or are nearing, completion; others are in hand or, at any rate, are definitely decided upon.

Stafford Station, on the West Coast main line from Euston to Crewe, has been almost entirely rebuilt with a re-arrangement of fast and slow lines, as at several other points in that area, to facilitate through running and junction connections. Preparations are going forward for electrification on the overhead system southward from Crewe, to Birmingham and London. At Rugby, a new maintenance depot for servicing electric locomotives and train sets is being built. Also at Rugby, as at Bletchley, viaducts have taken shape that will, when completed, carry present converging tracks over the main lines and reduce the number of conflicting junctions on the level.

Hemel Hempstead, Herts, 24½ miles from Euston on the main line, is to have an impressive new station. On a more comprehensive scale, the reconstructed Coventry Station, with separate parcel and mail access, car parking area, attractive passenger halls and refreshment rooms, as well as considerably more platform space than has been available hitherto, will soon be a notable landmark along the Rugby–Birmingham–Wolverhampton trunk route. Colour light signalling is being extended generally, with new power-operated signal boxes controlling greater distances.

The rebuilt Shaw Street Station in the Lancashire industrial town of St. Helens, where the major industry is glassmaking, is most striking and probably unique in its style. It is, appropriately enough, largely built of glass—over 10,000 square feet of it—armourclad, plain, coloured and so on. In all, twelve different varieties are used. There is central heating, fluorescent lighting, hot water supply and other equipment in keeping with the latest designs elsewhere.

This station sees the passage of frequent diesel, and other, trains on the Liverpool–Wigan line, and via St. Helens Junction on the main Liverpool–Manchester route which was opened as long ago as 1830 and which provides connecting services to Warrington, Earlestown and beyond.

Complete reconstruction of the partly ancient and rather rambling Euston terminus is being commenced. The vast work will take some years as it will revolutionise the present layout and appearance, inside and outside, involving, to the regret of many people, demolition of the historic Doric Arch spanning the chief road approach. Later, it will affect the fine old Great Hall, staircase and gallery adjacent to the booking offices, and the original central platforms. These are of limited length and are now usually occupied only by parcels trains, spare vans and vehicles.

Underground, the London Transport station at Euston is to be rebuilt and modernised. It serves, at separate platforms on differing levels, two sections of the Northern Line Tube.

WEST COAST DIESEL RUNS

The Anglo-Scottish main line from Euston and Crewe is easily graded for the most part until Carnforth, 236 miles from London and close to the coast on Morecambe Bay. The terrain then changes rapidly so that within the next 31 miles to Shap Summit, 915 feet above sea level, amid wild moorland country, northbound trains have to surmount two hard climbs. The first one, as far as Grayrigg, is the longer; the second, up at 1 in 75 for four and a half miles to the top, is shorter but steeper. Double-heading by two locomotives has often been necessary with heavy trains. Alternatively, and especially with freight, banking engines have assisted

B.R. Standard 4–6–2 No. 72001 "Clan Cameron" (above) is seen climbing Grayrigg Bank with a Liverpool–Glasgow train in this photograph by W. Hubert Foster. Our heading picture, by John Lake, shows Pannier tank No. 9770 on shunting duties at Clapham Junction.

from Tebay to Shap, but the availability in greater numbers of more powerful steam and diesel locomotives has lately reduced such working.

The *Royal Scot* as currently scheduled in the winter timetable, conveying an 8-coach, limited load, calls at Preston within four hours from the Euston start. The 90 miles to the next stop, at Carlisle, are allowed only 89 minutes; with one hour to Shap Summit, 58¾ miles, passing time; then 29 minutes for the final 31¼ miles into Carlisle, including a careful approach after long stretches of downhill running to the Eden Valley.

On one trip, Type 4 1 Co–Co 1 diesel-electric, No. D337 was the locomotive through from London to Glasgow, and was remanned at Carlisle. Fast running was sustained from Preston through Lancaster and Carnforth, with maxima around 80 m.p.h. The first summit, at Grayrigg, was topped at 55 with time well in hand.

The next few miles often provide thrilling moments as the line sweeps round in a great curve almost on a mountainside, and drivers take advantage of the few miles' breathing space to accelerate as fast as possible before tackling Shap Bank itself. For instance, during a journey enjoyed and described just over three years ago, with the similarly-loaded *Caledonian* hauled by steam 4–6–2, *City of Chester*, (non-stop Euston–Carlisle), speed rose rapidly from 50 to 80 between Grayrigg and Tebay, afterwards falling to 39 at Shap, although the engine was not pressed.

On the *Royal Scot* run, locomotive No. D337, probably using full power, maintained over 40 m.p.h. to the summit, passed five minutes early, having touched 79 through Tebay. There was, in this case, no need for the high speeds sometimes logged down the subsequent descent, but an excellent run ended with the train at rest in Carlisle within 85 minutes from Preston, or 5 hours 20 minutes from London, and before time. Given good visibility on this route, there are grand views of some of the Lake District peaks. Shap Summit and signal box are over two miles south of Shap Station.

The southbound *Mid-Day Scot* may be made up to twelve coaches, although its fast timing through a number of sections is similar to that of the lighter *Caledonian* and *Royal Scot*. It calls at Crewe, where I joined it, and on that evening had "10-on", say 360 tons, and No. D324 had evidently been doing well up to that point. Liberal allowances apply to cover delays caused by modernisation and electrification work on the way to London. However, although there were six additional slowings, and a short signal stop before Stafford, we were at Euston nine minutes early in two and threequarter hours. Maximum speeds were 77–79 m.p.h. and accelerations were rapid. Past Weedon —where the M1 motorway runs parallel to the railway for a mile or two—Wolverton and Bletchley, nearly 70 was averaged for 40 miles, until track repair slowing occurred around Tring.

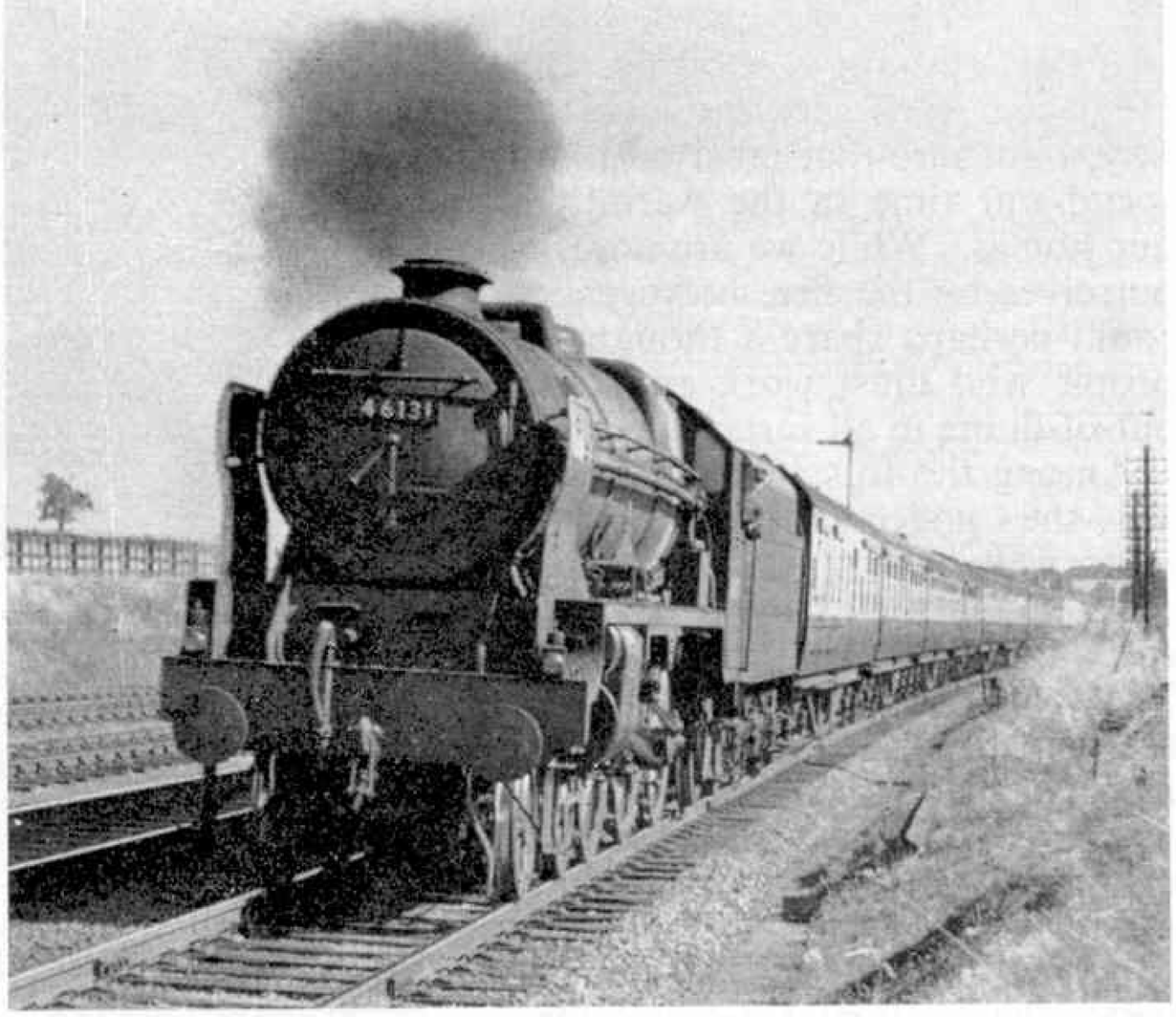
A TRIBUTE TO STEAM

The photographs accompanying my notes this month were taken at widely-scattered points on the Western Division, L.M.R. They depict three of the steam express locomotive types still at work there, though now to a more limited extent as the result of dieselisation. Of these, the B.R. 6P Clan class is the newest and is often seen between Preston and Carlisle. Before the more widespread introduction of diesels, the 7P three-cylinder Royal Scot 4–6–0s performed an enormous amount of fast train duty extending over 30 years or more, to and from Euston, Birmingham, Liverpool, Carlisle, Glasgow, etc., and more recently on the St. Pancras expresses as well as other Midland Division services. The present modified and attractive appearance, including the tapered boiler and double chimney that were part of a successful reconstruction, dates from 1943 onward.

The more powerful, but less numerous, 8P 4–6–2 four-cylinder Coronation and City series of engines, developed from the "Princess Royal" class now being withdrawn, have since 1937 hauled mainly the principal Anglo-Scottish and London–Liverpool expresses.

* * * *

As a stage towards complete introduction of phase two in the main line electrification plan intended later in the year, overhead-wire traction has been brought into use between Crewe and Liverpool (Lime Street) for multiple unit local and locomotive-hauled trains.

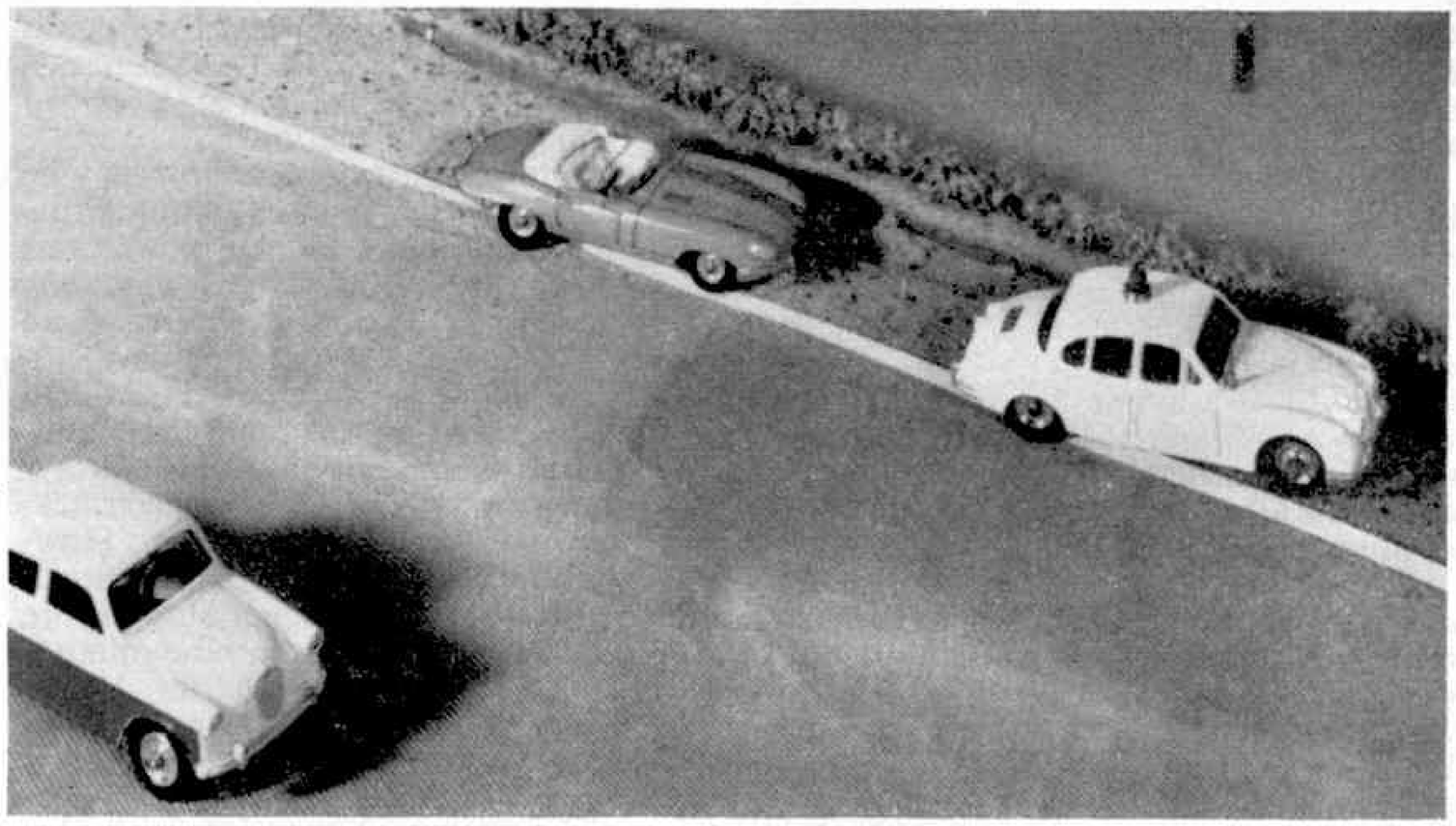


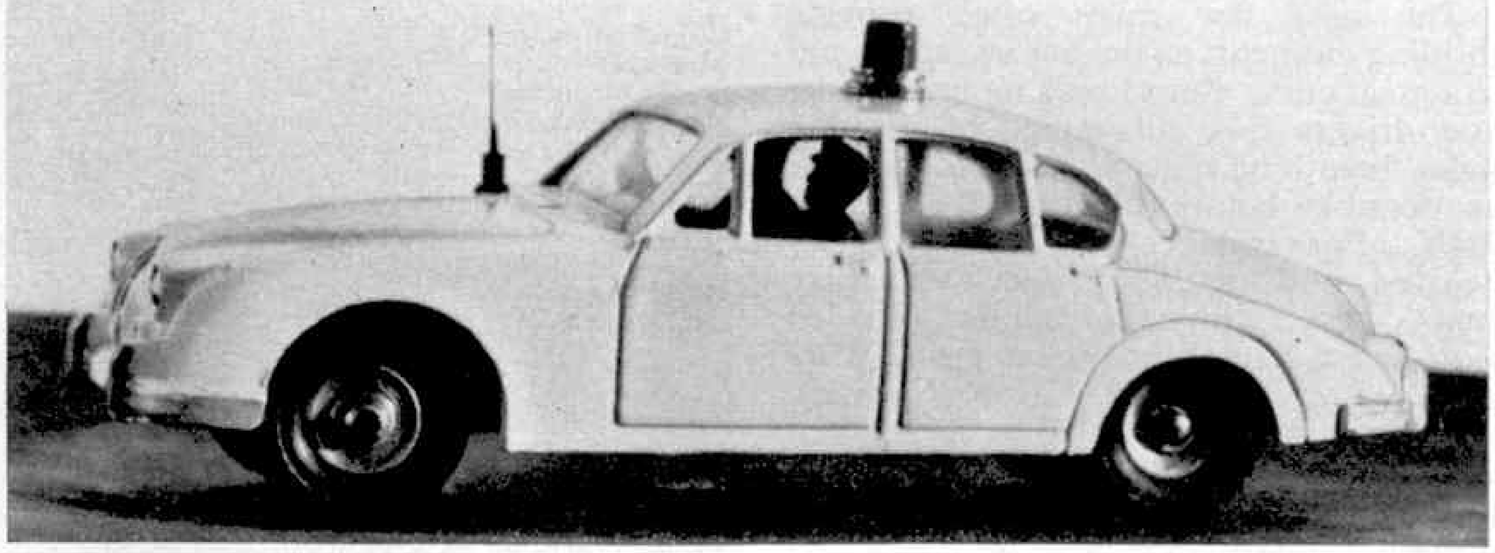
(Right) A down Manchester express of some years ago photographed near Tring by C. Stevens. The engine is No. 46131 "The Royal Warwickshire Regiment."

(Below) No. 46246 "City of Manchester" backs out of Lime Street Station, Liverpool, after arrival on "The Red Rose". John Corkhill took this photograph, before the advent of overhead-wire electrification.

DINKY TOYS NEWS

Motorway Police Car





Top: Off the motorway and on to the hard core. A Motorway Police Car stops an erring motorist. Below: A close-up of the new Dinky Toys Motorway Police Car showing the neat detail.

APRIL—month of showers. But, when April showers come our way, I am sure that most of us will spend our time in the warmth of our homes. While we are amusing ourselves by the fire, however, we could perhaps spare a thought for people who must work and travel out-of-doors in all sorts of weather.

Among the folk in this category are the police patrols on our motorways whose task is far from easy. Often they have to travel at speed on wet and slippery surfaces. The very fact that our motorways are built to allow fast driving from place to place makes it imperative that the police patrols should be equipped with cars which are capable of high speeds with very good performance. What could be better than a Jaguar 3.4 litre for a job of this sort? With this in mind, we are pleased to introduce this month a model of a Motorway Police Car based on the Jaguar 3.4 litre saloon—No. 269 in our list.

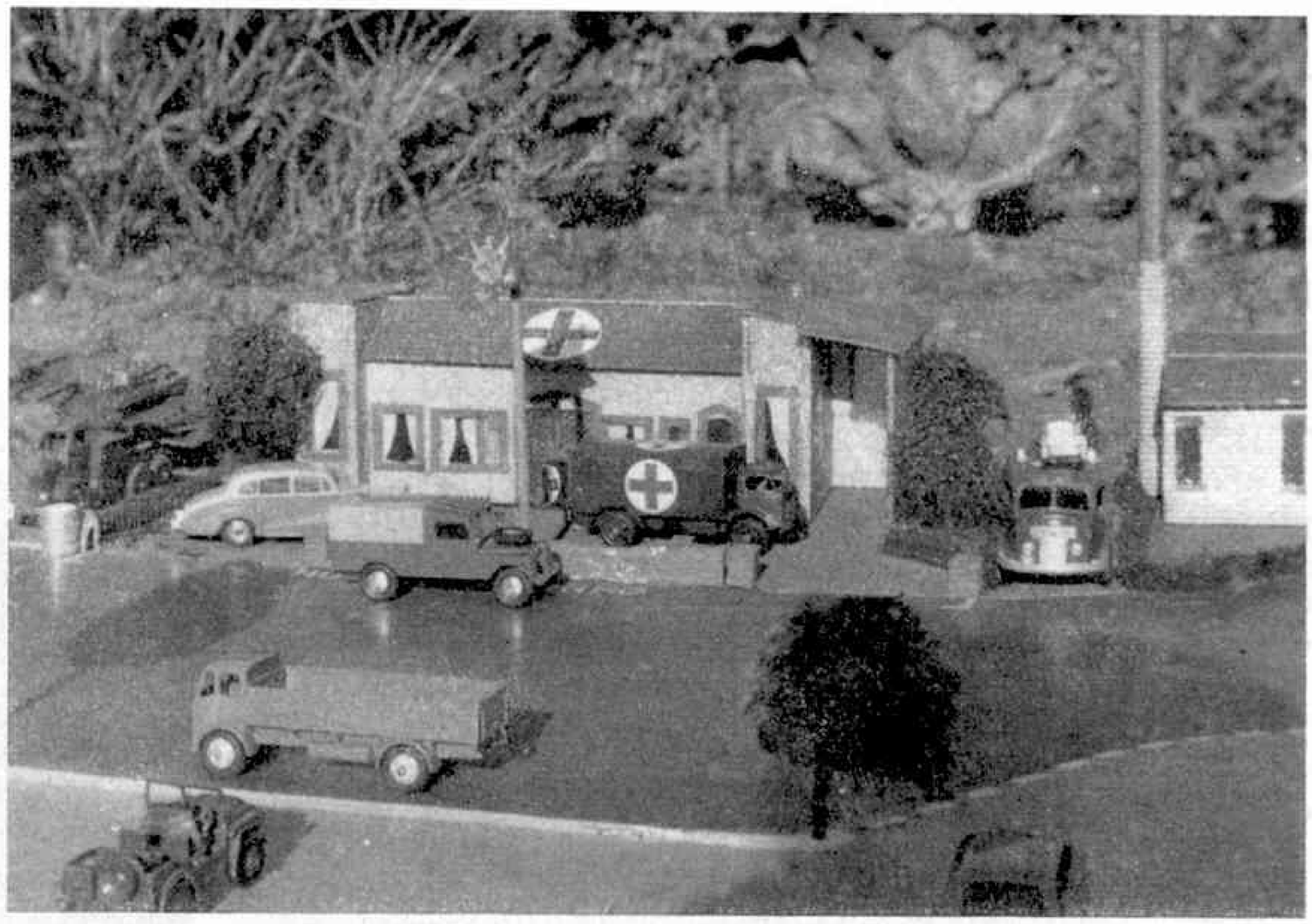
At this point I can perhaps give you some information concerning the actual vehicle, because I am sure that most of my readers would like to know something about its technical performance and statistics.

It has a 6-cylinder engine with a cubic capacity of 3,442, developing a brake horse power of 210 at 5,500 r.p.m. Its dimensions are as follows: Overall length, 15 ft. $0\frac{3}{4}$ in.; overall width, 5 ft. $6\frac{3}{4}$ in.; overall height, 4 ft. $9\frac{1}{2}$ in.; wheelbase, 8 ft. $11\frac{3}{8}$ in.; front track, 4 ft. $6\frac{5}{8}$ in.; rear track, 4 ft. $2\frac{1}{8}$ in.

The interior of this superb car is very comfortable indeed, having finest quality leather upholstery over deep foam rubber cushions. The front seats are fully adjustable and there are armrests on all doors, with a folding rest in the centre of the rear seat. Wet and cold weather driving are made much easier by the interior heater, demisters and windscreen washers, which are standard extras, and the efficient windscreen wipers can be operated at two different speeds depending on the volume of the falling rain. As a driver myself, I

BY THE TOYMAN

For work on building schemes operated by Dinky Toys enthusiasts the Muir-Hill 2-WL Loader (left) is an indispensable item. This illustration shows how close the miniature is to reality.



The two illustrations on this page show scenes from the Army barracks layout built by Christopher J. Watson. On the right is a view of the hospital with Dinky Toys No. 626 Military Ambulance and other vehicles drawn up outside. Below you see part of the dual carriageway, with accommodation blocks on either side, and the bridge, about which Christopher writes, in the background.

can truthfully say that this is very helpful indeed in certain circumstances. To sum up—this car, in my view, is truly a wonderful one.

I also think that our model of the Motorway Police Car is first-class and I am sure very many enthusiasts will agree with me once they have seen it. You see it illustrated in the two top pictures on page 154, where the first illustration shows the vehicle engaged on one of the many aspects of its job. It has just forced an "E" Type Jaguar off the motorway on to the hard "shoulder" and no doubt has very good cause for doing so. It must be remembered that although the motorway is meant for fast driving, there is such a thing as dangerous driving. It is quite possible that this is what the "E"-type driver was indulging in.

Now to the actual description of the model. It is fitted with "finger-tip" steering, windows, detailed interior, and suspension, and is finished in a distinctive white gloss with an imitation flashing blue light on the roof. There is a radio aerial on the front offside wing and the car carries the word "Police" across the boot.

The final touch of authenticity is provided by the two uniformed policemen —driver and passenger—inside. All in all, this is an excellent model and is a "must" for any collector who intends to build, or who has already built, a motorway layout. So much for this month's new model.

Now let me introduce you to one of our most enthusiastic collectors of Dinky Toys —Christopher J. Watson, who has sent me details and photographs of a very interesting layout which he has constructed. Christopher is at school in the Isle of Wight, but his parents are at present in Singapore, his father being an Officer in the Royal Engineers. It is not surprising that Christopher's scheme deals with Army life. It is, in fact, a portable model of an Army barracks, constructed during his holidays from boarding school as an indoor model but quite suitable for re-arrangement for use in the open air.

In his letter Christopher tells me, "The model is of a very modern Army barracks of my own design. The baseboard is in three parts, each consisting of hardboard braced with thick timber and painted to add a realistic touch. One portion is four feet square and consists of a vehicle park and several buildings, mainly a block of offices, a hospital and a cookhouse. The second part, measuring 4 feet × 1 foot 9 inches, has a dual carriageway with accommodation blocks on either side. On the last section is the parade square, a guardroom and some rough ground, and when the model is used out-of-doors the road from this section leads out on to the lawn.

"The buildings are made of Balsa wood, with Perspex windows, and are finished with 00 gauge brick paper. They are very economical and cost approximately 1/– each to build. The trees and hedges are made of dyed cotton-wool. The bridge you can see on one of the pictures is an old Canadian model which I had given to me, and which looks most effective.

"The whole model is completed by adding trees and grass cuttings around the edges of the baseboard."

Our pictures show you what the layout looks like and I am sure readers will agree with me when I say that Christopher has done an excellent job, and should feel very proud indeed of his achievement.

At this point, I would like to draw your attention to the illustration at the foot of

(*Continued on page 175*).

AUTOMATIC TICKET-ISSUING MACHINE

THE machine illustrated in Fig. 1 is designed for issuing tickets on the insertion of a coin in a slot provided. It is actuated by a No. 1 Clockwork Motor and is a most interesting machine to build and operate. Construction should commence with the framework, which is assembled as follows.

Framework

A 12½" Angle Girder 1, and a 9½" Angle Girder 2 are connected by two 7½" Angle Girders 3 and 4, the resulting space being filled in by two 5½" × 2½", one 5½" × 3½", and two 4½" × 2½" Flat Plates. The door is built from a 3½" × 2½" Flexible Plate, edged with Strips, which are fastened by Hinges to the Angle Girder 2. A Handrail Support has a Fishplate lock-nutted to its shank to form the catch.

The other side (not shown), is similar in construction

BY SPANNER

with the exception that two 4½" × 2½" Flat Plates are bolted to the outside Angle Girders and a Clockwork Motor is bolted to the Plates through the fourth hole from the 12½" Angle Girder, and to the bottom Angle Girder 3. Above the Motor a further 4½" × 2½" Flat Plate is fixed. Both sides are joined by four 5½" Angle Girders 5, 6, 7 and 8, and to the Angle Girders 4 two 5½" × 3½" Flat Plates 9 are bolted.

The Coin Slide

The coin slide is built up from a pair of 9½" Angle Girders 10, spaced apart by two 7½" Strips to form a "T" girder, the Strips being placed to form a groove and necessary space for the coin being supplied by using the slotted holes of the Angle Girders. The two "T" girders are now joined but are spaced away from each other by a 1⅛" Bolt in the second hole from the top of the Angle Girder, using three nuts, and another 1⅛" Bolt in the sixth hole from the bottom. A penny should now be tried in the slot and should run freely. The two 1⅛" Bolts are placed in the Angle Girders facing the front of the machine. The slide can now be fixed to the machine by a further two 1⅛" Bolts 11 and 12, which are fitted in the second and twelfth holes of the Angle Girders facing the rear of the machine, counting from the top, and in the third hole from the front Angle Girder 2. Three 3½" Strips 15 are then

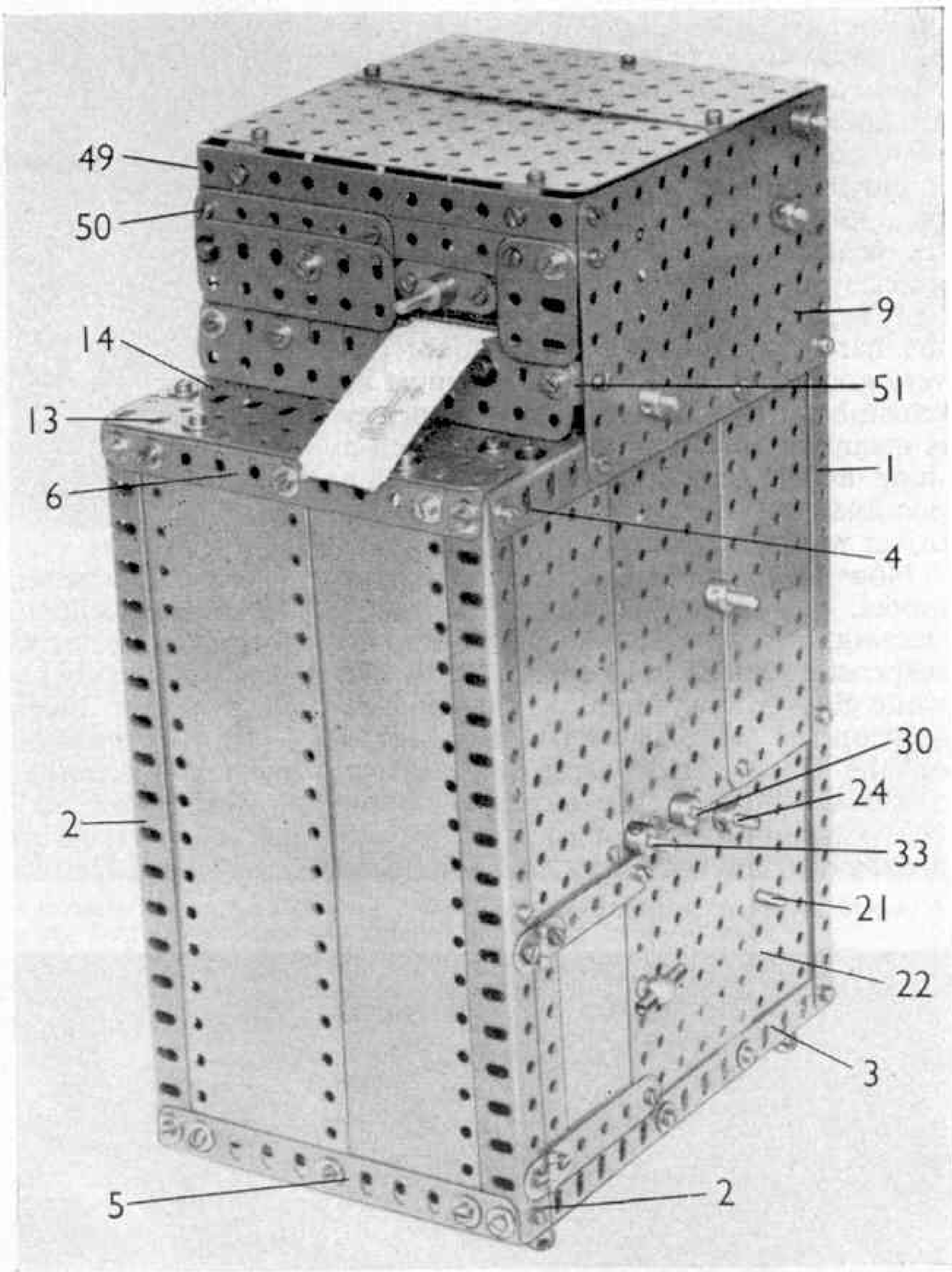


Fig. 1. The Automatic Ticket Machine in its completed state.

bolted in the second hole of the Angle Girder 2 and passed through the slot of the Angle Girders 10. Two 5½" Flat Girders 13 and 14 are next bolted to the Angle Girder 6, with a space between them so that the mouth of the coin slot is not obstructed. The resulting surplus space is covered by a 2½" Flat Girder bolted beneath the Flat Girder 14.

The Coin Box

A 2½" × ½" Double Angle Strip 16 is bolted to the Angle Girder 6, forming one side of the box and a 4½" × 2½" Flat Plate 17 is secured to the base Angle Girders to form the base. Two 2½" × 2½" Flat Plates are bolted to Plate 17 by means of two 2½" Angle Girders to form the two remaining sides and their top corners are held together by an Angle Bracket.

Please note that the 3½" Strips 15 touch the Plate 17.

Fig. 2. The Ticket Machine seen from the rear, with the back removed.

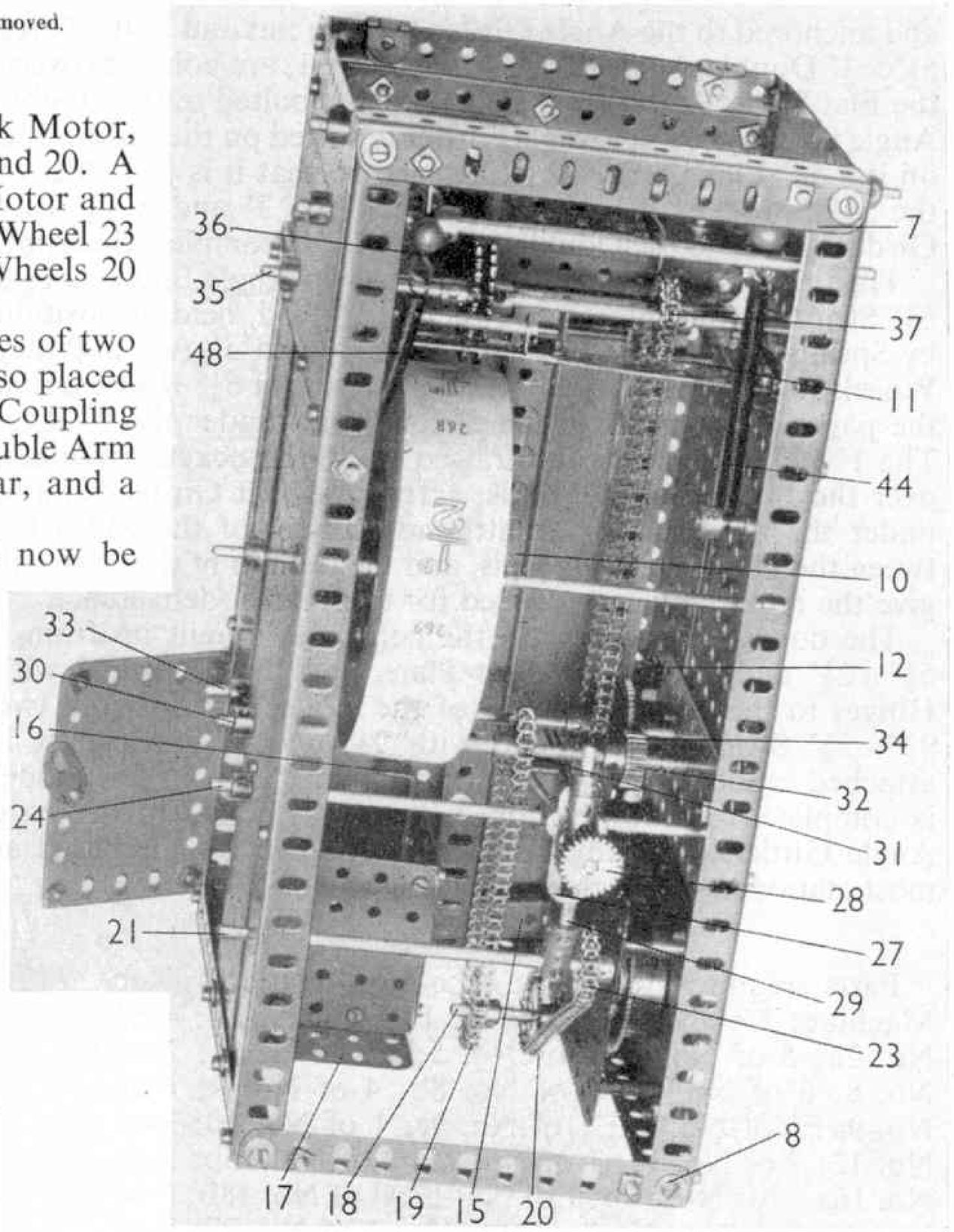
The Drive

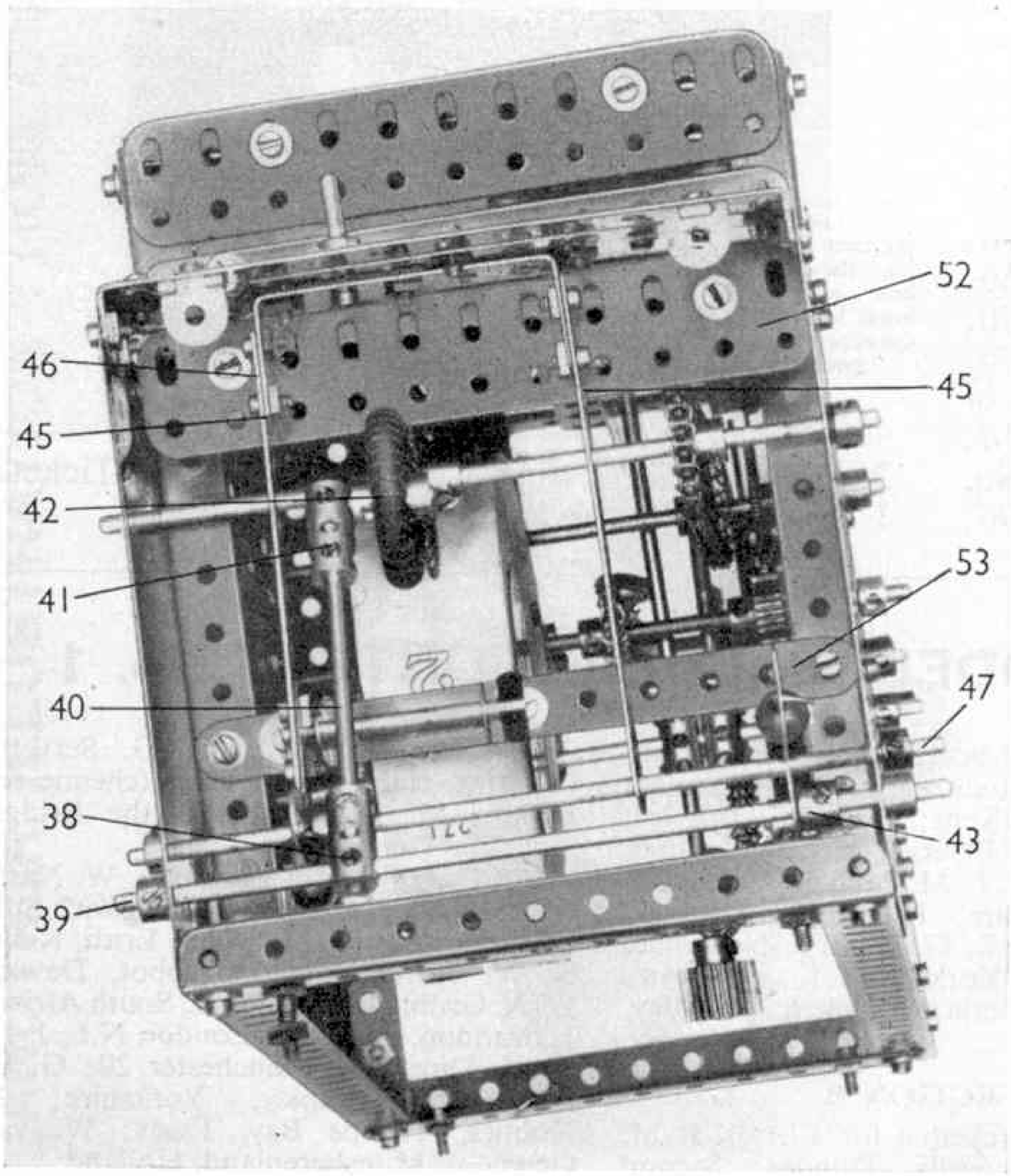
A $2\frac{1}{2}$″ Rod 18 is fixed in the No. 1 Clockwork Motor, and on it is secured two 1″ Sprocket Wheels 19 and 20. A 5″ Rod 21 is journalled in the side-plate of the Motor and the Flat Plate 22, and this carries a 1″ Sprocket Wheel 23 and a Coupling with a 1″ Rod. The Sprocket Wheels 20 and 23 are connected by Chain.

A $6\frac{1}{2}$″ Rod 24 is passed through the centre holes of two Couplings 25 which are fixed to two 4″ Rods 26, so placed as to be in the centre of the coin slide. The inner Coupling also carries a $2\frac{1}{2}$″ Rod on which is mounted a Double Arm Crank 27, a Coupling with a 1″ Rod and Collar, and a $\frac{3}{4}$″ × $\frac{1}{2}$″ Pinion 28.

The mechanism, assembled thus far, should now be tested by placing a penny in the slot. It should move the 4″ Rods downwards thus releasing the Double Arm Crank from the 1″ Rod 29, which, in turn, allows the Motor to run. The balance weight 28, however, should immediately return the Rods to their normal position, thus stopping the Motor *after only ONE revolution.*

Now a 1″ Sprocket Wheel 31 and a $\frac{3}{4}$″ Pinion 32 should be secured to the $6\frac{1}{2}$″ Rods 30. Next, a 50-tooth Gear Wheel should be meshed with the $\frac{3}{4}$″ Pinion on the Rod 33, which also has a 1″ Sprocket Wheel 34 secured to it. Sprocket Wheels 19 and 31 are connected by Chain.





On a $6\frac{1}{2}$″ Rod 35, two $1\frac{1}{2}$″ Sprocket Wheels 36, spaced $\frac{1}{8}$″ apart, and a 1″ Sprocket Wheel 37, driven with Chain from the Sprocket Wheel 34, are fixed. A Coupling 38 is secured on a $6\frac{1}{2}$″ Rod 39, and a 3″ Rod 40 fixed in this Coupling, has another Coupling 41 secured on its other end and this in turn supports a 1″ Pulley and Tyre 42 on a 1″ Rod. The Pulley (which is free to revolve) is held by a Collar on the Rod while the Tyre is placed in the centre of the two $1\frac{1}{2}$″ Sprocket Wheels. A Crank 43 secured to the Rod 39 has a Spring 44 attached and this is held in position on an Adaptor for Screwed Rod by a Collar. The Spring regulates the tension required to feed the tickets between the Sprockets and the Tyre.

Two $4\frac{1}{2}$″ Strips 45 are connected together by a $2\frac{1}{2}$″ × 1″ Double Angle Strip 46, which has a three hole type razor blade bolted to it. An Adaptor for Screwed Rod is bolted through its centre hole to form a handle for the cutting blade. The Strips are pivoted on a $6\frac{1}{2}$″ Rod 47, one Strip having a Bell Crank bolted to it. The Spring 48 is secured to the Bell Crank by a Loaded Hook,

Fig. 3. In this view the Ticket Machine is seen from the top, with the plating removed.

and anchored to the Angle Girder 1 with a nut and bolt. Three $5\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 49, 50 and 51, are bolted between the Flat Plates 9, and a $5\frac{1}{2}''$ Flat Girder is bolted to the Double Angle Strip 51. A $4\frac{1}{2}''$ Angle Girder is bolted on the inside, and on it a $5\frac{1}{2}''$ Flat Girder 52 is fastened so that it is just clear of the $1\frac{1}{2}''$ Sprocket Wheels and Tyre. Two 3" and a $1\frac{1}{2}''$ Flat Girder, bolted to the Double Angle Strip 50, complete the front.

The ticket guide is made by bolting two Angle Brackets to a $5\frac{1}{2}''$ Strip 53, and inserting in them a 2" Rod, held in position by Spring Clips. A roll of tickets is mounted on two 1" Pulley Wheels placed between two Face Plates on a $6\frac{1}{2}''$ Rod 54, and the paper is passed over the Strip 53 and under the 2" Rod. The 1" Pulley and Tyre are raised while the tickets are taken over the $1\frac{1}{2}''$ Sprocket Wheels, across the Flat Girder 52, and under the razor blade. A little adjustment of the width between the $1\frac{1}{2}''$ Sprocket Wheels, and the tension of the Tyre will give the required length of feed for each ticket delivered.

The door giving access to the coin box is built up from a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ and a $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate, and it is attached with Hinges to the side. The back of the model is built from two $9\frac{1}{2}'' \times 2\frac{1}{2}''$ Strip Plates, edged with $9\frac{1}{2}''$ and $4\frac{1}{2}''$ Strips. It is attached to the $5\frac{1}{2}''$ Angle Girders by four $\frac{3}{8}''$ Bolts. The model is completed by four Handrail Supports, bolted in the base Angle Girders. Suitable rolls of tickets can be purchased at most stationers quite cheaply.

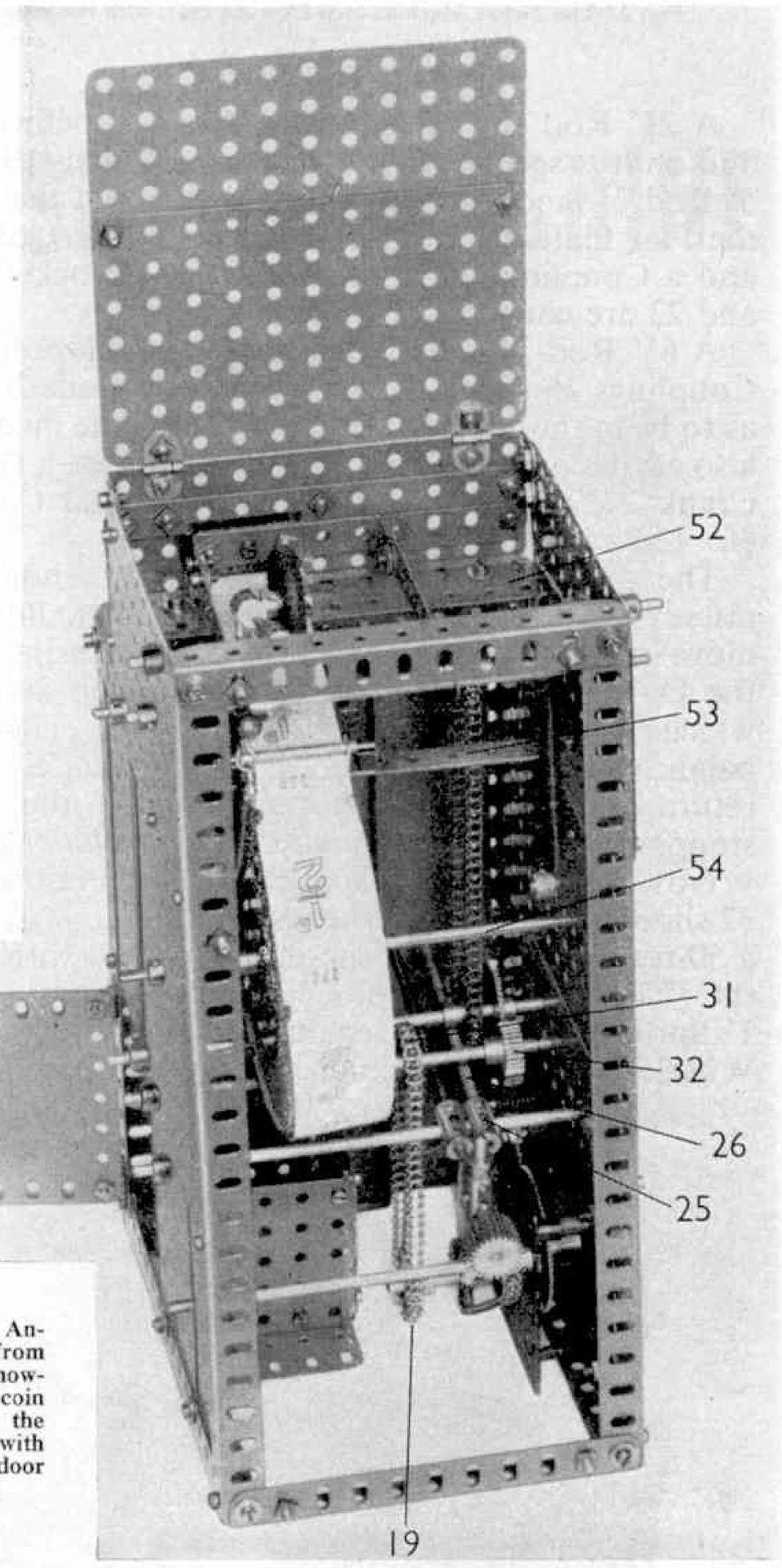


Fig. 4. Another view from the rear showing the coin box at the lower left with the access door open.

Parts required to build the Automatic Ticket Machine: 2 of No. 1; 4 of No. 1b; 1 of No. 2; 4 of No. 2a; 5 of No. 3; 2 of No. 5; 1 of No. 6a; 2 of No. 8; 6 of No. 8a; 4 of No. 8b; 4 of No. 9; 1 of No. 9a; 1 of No. 9d; 1 of No. 9e; 1 of No. 10; 3 of No. 12; 7 of No. 14; 1 of No. 15; 2 of No. 15b; 2 of No. 16a; 1 of No. 16b; 1 of No. 17; 4 of No. 18b; 3 of No. 22; 1 of No. 25; 1 of No. 25a; 1 of No. 27; 2 of No. 35; 132 of No. 37a; 104 of No. 37b; 53 of No. 38; 2 of No. 43; 1 of No. 46; 1 of No. 48a; 3 of No. 48d; 5 of No. 52a; 6 of No. 53a; 2 of No. 57c; 18 of No. 59; 1 of No. 62; 1 of No. 62b; 6 of No. 63; 5 of No. 70; 2 of No. 72; 1 of No. 94; 2 of No. 95a; 6 of No. 96; 4 of No. 103; 2 of No. 103e; 1 of No. 103f; 1 of No. 103h; 2 of No. 109; 13 of No. 111c; 4 of No. 111d; 4 of No. 114; 1 of No. 128; 5 of No. 136; 1 of No. 142c; 2 of No. 173a; 1 of No. 190a; 2 of No. 196; 2 of No. 197. 1 Razor Blade, 1 Roll of Tickets, 1 No. 1 Clockwork Motor.

RESULTS OF WINTER MODEL-BUILDING CONTEST No. 1

THE prizewinners in the first of the 1961/62 Winter Model-Building Competitions, which closed December 31 last year are:

SECTION A

First Prize (cheque for £5.5.0), R. W. Fidler, Tettenhall, Staffordshire; Second Prize (cheque for £3.3.0), M. R. Field, Durley Park, Keynsham, Nr. Bristol; Third Prize (cheque for £2.2.0), K. Broomhall, Aston, Nantwich, Cheshire.

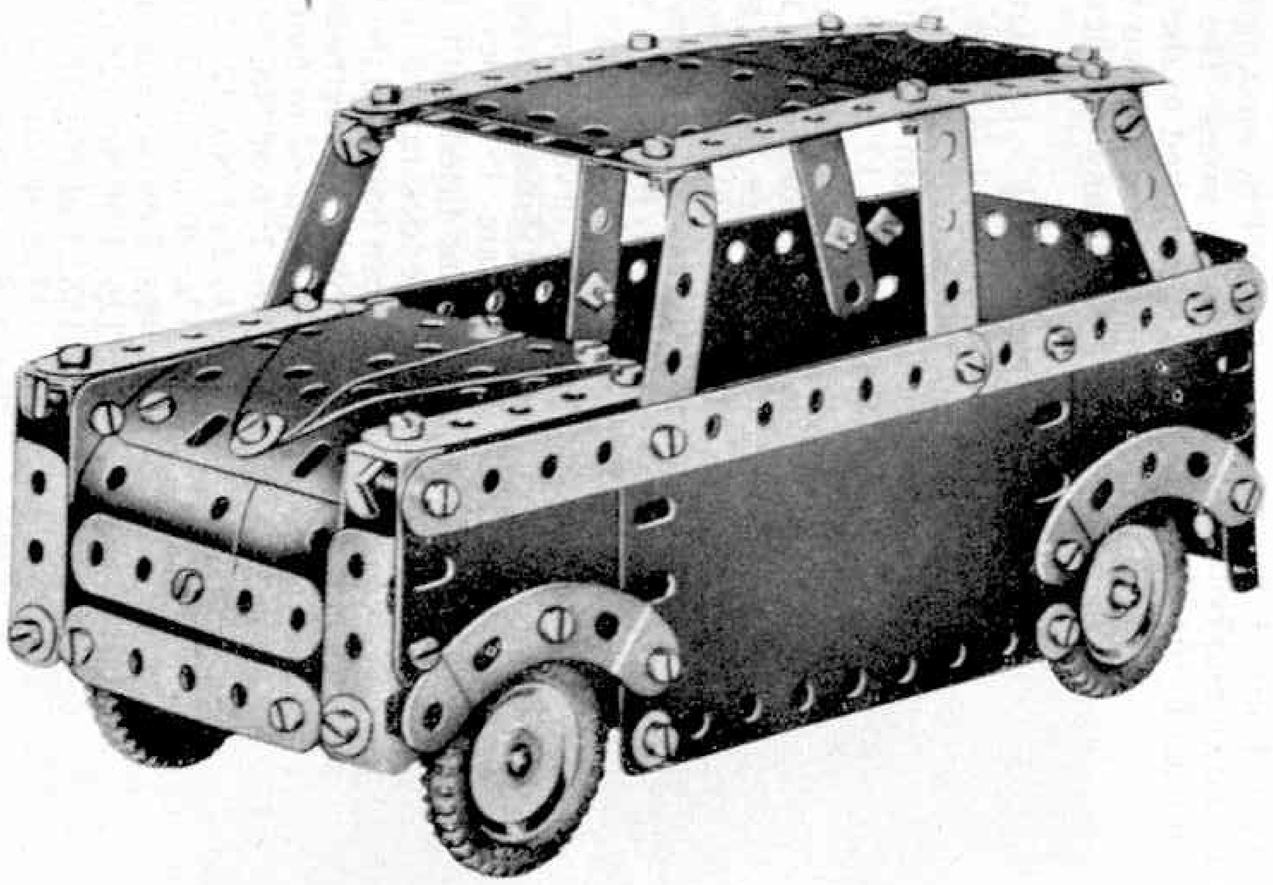
Ten Prizes each of 10s. 6d.: D. Clark, Leven, Fife, Scotland; C. Foxhall, Uplands, Tavistock, Devon; A. Blackman, Sittingbourne, Kent; P. C. R. Apperley, Gloucester; X. Fleurist, Maisons Leffitte, S. et O., France; L. M. Padfield, Yarnbury, Wylye, Wiltshire; H. E. Pearson, St. Philips, Bristol 2; G. J. Hirst, Newsome, Huddersfield, Yorkshire; I. Markham, Monrovia, Liberia; M. Bell, Bletchley, Bucks.

SECTION B

First Prize (cheque for £7.7.0), J. M. Sturrock, Ninewells, Dundee; Second Prize (cheque for £5.5.0), G. Servetti, Piacenza, Italy; Third Prize (cheque for £3.3.0), M. Brookfield, Blythe Bridge, Stoke-on-Trent.

Ten Prizes each of £1.0.0: G. W. Nash, Warrington; J. C. Palmer, Droitwich Spa, Worcestershire; C. T. Miles, Erith, Kent; B. W. Rowe, Newton Abbot, Devon; W. A. Grobbelaar, Pretoria, South Africa; J. Brandon, Islington, London N.1; J. D. Read, Didsbury, Manchester 20; G. R. Illingworth, Shipley, Yorkshire; P. Holmes, Thorpe Bay, Essex; W. van Gemeren, Mijnsherenland, Holland.

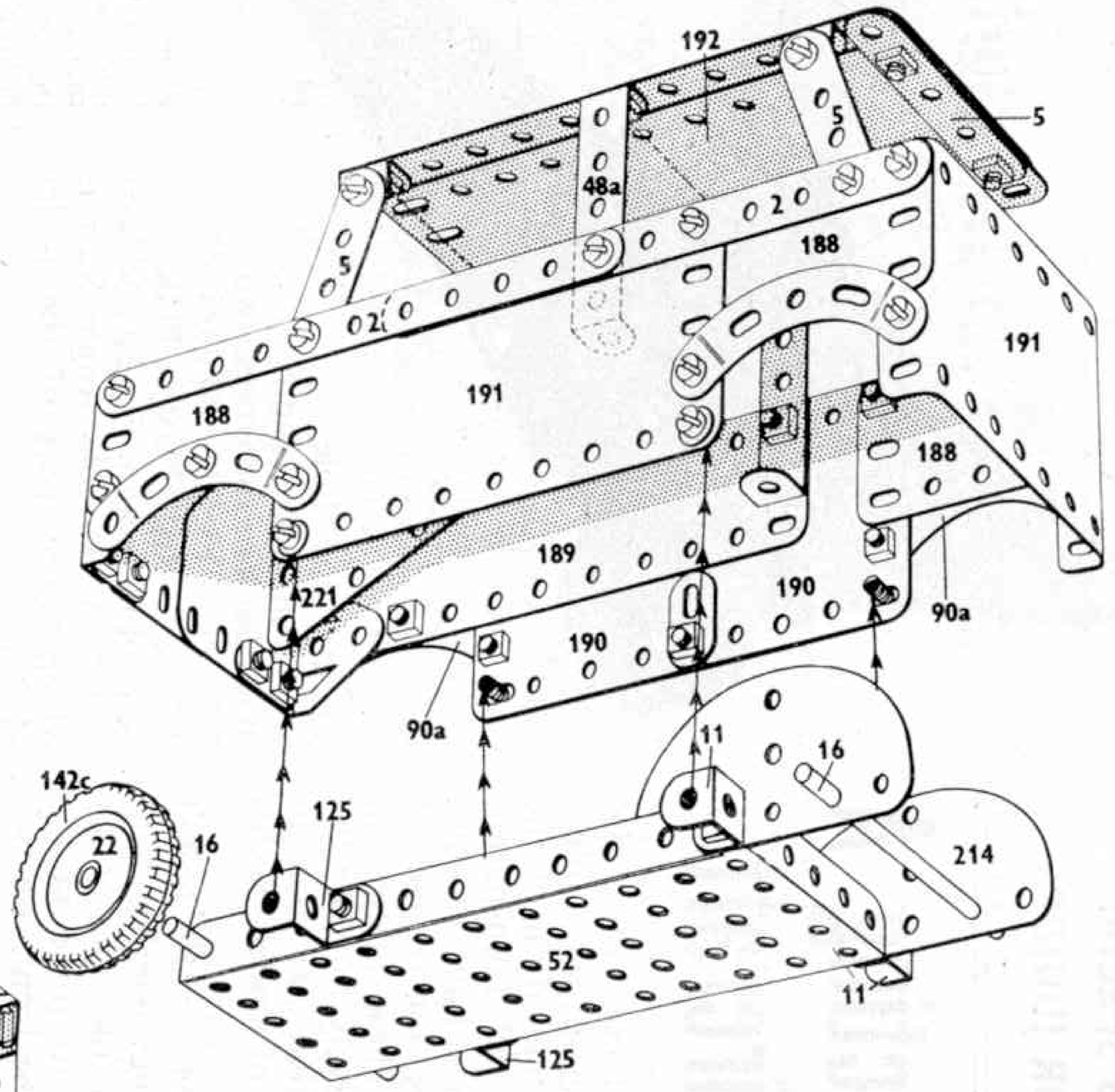
ANOTHER ILLUSTRATION FROM OUR NEW-STYLE BOOKS OF MODELS

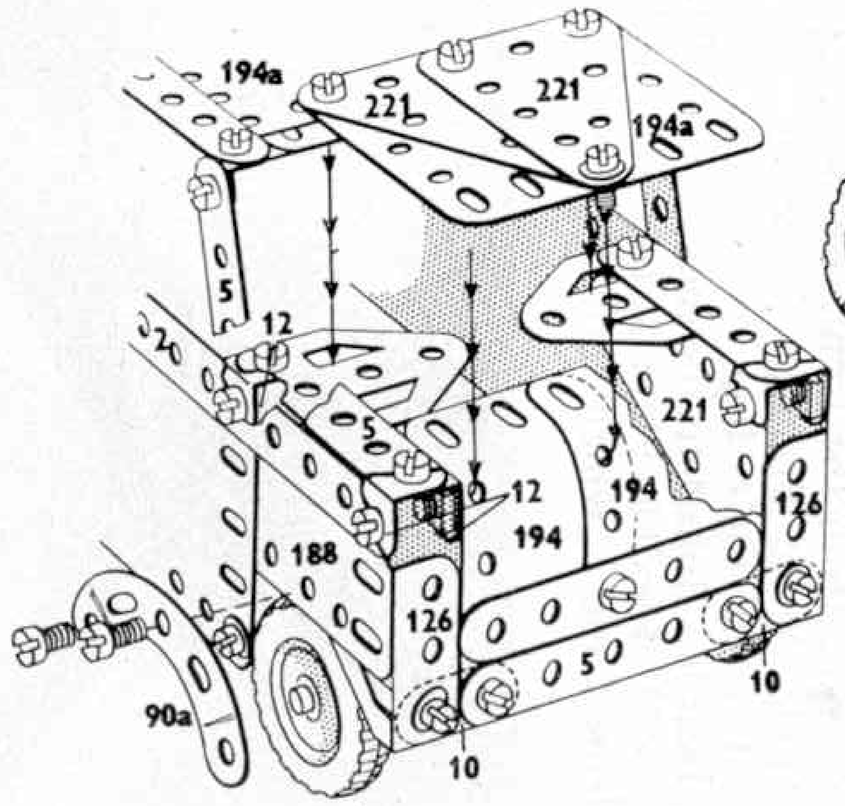


SALOON CAR: OUTFIT No. 3

PANEL SHOWS PARTS

REQUIRED AND PART NUMBERS





3.7

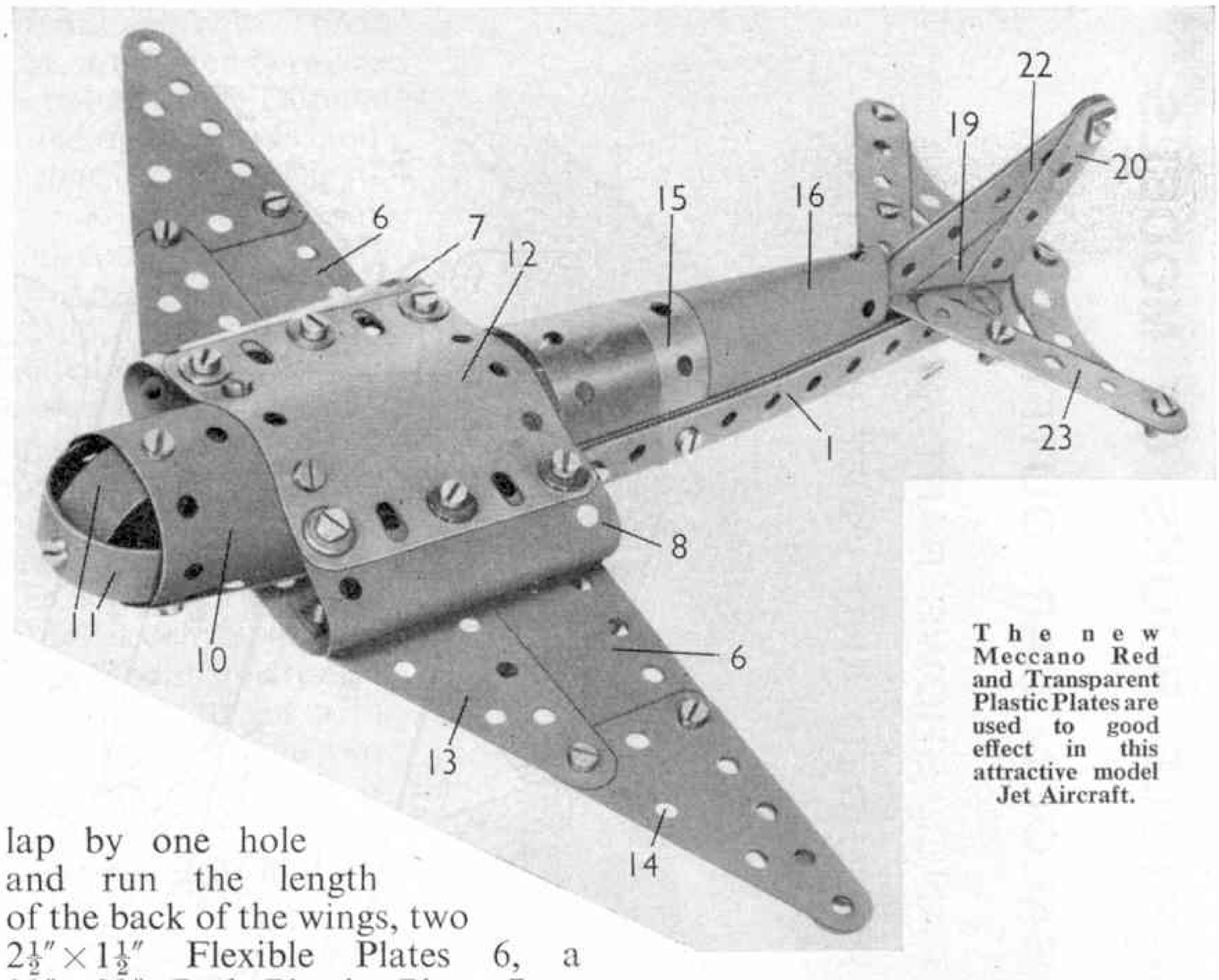
6	–	2	2	–	125
9	–	5	2	–	126
3	–	10	2	–	126a
2	–	11	4	–	142c
10	–	12	2	–	188
2	–	16	2	–	189
4	–	22	2	–	190
60	–	37a	2	–	191
56	–	37b	2	–	192
9	–	38	2	–	194
2	–	48a	2	–	194a
1	–	.52	2	–	214
4	–	90a	4	–	221
4	–	111c			

SPANNER'S SPECIAL SECTION FOR JUNIORS

Constructing A Jet Aircraft

THE splendid model of a Jet Aircraft shown in Fig. 1 illustrates a useful application of the new Red Plastic and Transparent Plastic Plates which have recently been included in the range of Meccano Parts. These Plates can be used for effectively forming the curved surfaces that are such an important feature of models of this type.

Two $5\frac{1}{2}$" Strips 1 are bolted together so that they overlap eight holes. These form the sides of the fuselage. Bolted to these in the third hole from the front, are two Double Angle Brackets 2, which must have their lugs projecting outwards. Bolted to the lugs are a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate 3, two $5\frac{1}{2}$" Strips 4 and 5, which should overlap by one hole and run the length of the back of the wings, two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates 6, a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Red Plastic Plate 7, a Curved U-Section Plate 8 and lastly a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 9, which forms part of the undercarriage.



The new Meccano Red and Transparent Plastic Plates are used to good effect in this attractive model Jet Aircraft.

A $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate 10 is bent as shown and bolted so that it overlaps itself by three holes. Two Formed Slotted Strips 11 are bent as shown and bolted to one another and then fixed to the Flexible Plate 10. The Flexible Plate 10 is then bolted to the $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate 3 underneath the fuselage. The Flexible Plates 7 and 8 are then joined together at the rear by $2\frac{1}{2}$" Strips, at the same time bolting in a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Red Plastic Plate 12. They are all fixed to the top lugs of the Double Angle Brackets on the Strips 1. The Plates 7, 8 and 12 are also joined to the Strips 1 by an Angle Bracket fixed in their centre holes. The Red Plastic Plate 12 is then bolted to the Flexible Plate 10. The wings are finished by bolting in two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Triangular Flexible Plates 13 and 14.

Next a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Transparent Plastic Plate 15 and a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate 16 are bolted to the Strips 1, at the same time bolting beneath them two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Red Plastic Plates 17 and 18. The Strips 1 can now be bolted together at the tail, at the same time bolting in a Flat Trunnion 19, two $2\frac{1}{2}$" Strips 20, and two Trunnions 21. The Strips 20 are bolted together at the top with two $2\frac{1}{2}$" Strips 22 fixed between them. Two further $2\frac{1}{2}$" Strips 23 are fixed to the Trunnions 21. These have $2\frac{1}{2}$" Stepped Curved Strips bolted to them which are joined together at the back. The Wheels are 1" Pulleys without Bosses, which are fitted with 1" Rubber Rings. They are lock-nutted to Fishplates, which are in turn bolted to the lugs of the Double Angle Strip 9 underneath the fuselage.

An underneath view of the Jet Aircraft.

Parts required to build the Jet Aircraft: 6 of No. 2; 6 of No. 5; 2 of No. 10; 2 of No. 11; 2 of No. 12; 2 of No. 22a; 42 of No. 37a; 40 of No. 37b; 6 of No. 38; 1 of No. 48a; 2 of No. 90a; 1 of No. 111c; 2 of No. 126; 1 of No. 126a; 2 of No. 155; 2 of No. 188; 1 of No. 189; 2 of No. 190: 2 of No. 193; 2 of No. 194; 1 of No. 199; 2 of No. 215; 4 of No. 221.

WITH THE SECRETARY

Club and Branch News

IN the *M.M.* of January last I reported a very interesting visit I had paid not long before to the St. Annes Y.M.C.A. to present the members of the newly-formed Meccano Club there with their Affiliation Certificate. Since then I have had the pleasure of making a similar visit to the Bury Y.M.C.A., where there is now a flourishing and most enthusiastic Meccano Club. I hope to tell you more about this in a forthcoming issue. This is the third such Club to be established under the roof, so to speak, of the Y.M.C.A., the first being that of the Consett and District Y.M.C.A. in the town of that name in County Durham, which I have also visited and which has been in existence for about seven and a half years. This is indeed one of the most successful Meccano Clubs in this country and must be well known to Meccano Guild members generally as its activities have often been illustrated on this page.

The Y.M.C.A. is internationally known for the fine recreational facilities it provides for young people, and I have been able to see many of these activities for myself on visits such as those mentioned above. We are delighted that this fine youth organisation recognises the value of Meccano as a constructive recreation, and that more of its Centres are adding it to their programmes.

MECCANO CLUB RECENTLY AFFILIATED

BURY Y.M.C.A. M.C.—*Leader:* Mr. David Whatmough, Bury Young Men's Christian Association, 111 The Rock, Bury, Lancs.

HORNBY RAILWAY COMPANY BRANCH RECENTLY INCORPORATED

No. 580 — KESWICK (WEMBLEY). — *Chairman:* Mr. Alex J. Walker, 17 Keswick Gardens, Wembley, Middlesex.

CLUB NOTES

NORTH END (PORTSMOUTH) M.C.—Meccano model-building has continued, and the Secretary is constructing the Meccanograph described and illustrated in the February 1962 *M.M.* The Wall Clock is almost completed. At one meeting discussions were held on Colonel Glenn's flight into space. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

AUSTRALIA

MAYLANDS M.C.—The Club were invited by Bairds Ltd. to arrange a demonstration of working Meccano models in their toy department one Saturday morning, and the results were so good that the Club were asked to repeat the event the following Saturday. The models demonstrated included Reg England's models of Watt's beam engine and of a motor cycle and sidecar, Warren Bransby's penny-in-the-slot mechanism and gantry crane, Alan Vidler's Baltic tank locomotive, Richard Seaward's steam engine, Trevor Criddle's stiff leg derrick crane and Roger Thompson's Meccanograph. Bairds Ltd. acknowledged the good work of the boys with a donation of £10 to the Club building fund.

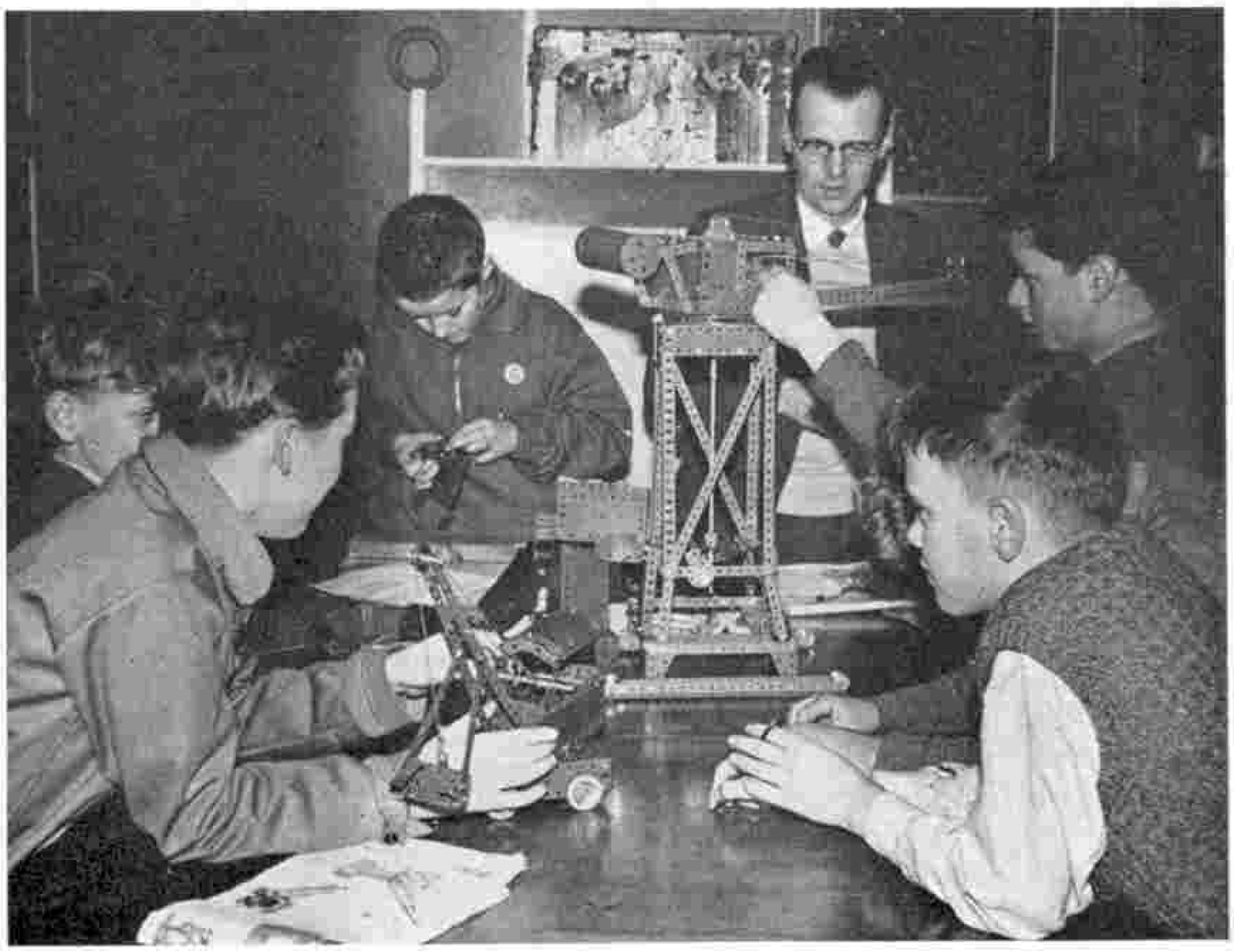
Members recently took part in another very enjoyable railway trip with the Australian Railways' Historical Society—this time to the Kwinana industrial area, which only a few years ago was sandhill and scrub country. (The area got its name from the burnt-out hulk of the State steamer *Kwinana* which was blown from its moorings at Garden Island on to the mainland during a storm in 1922.) Several stops were made at points of interest along the route for photographers to exercise their cameras, and afternoon tea was available at the B.H.P. siding at Kwinana. *Secretary:* Trevor Criddle, 16 Kennedy Street, Maylands, Western Australia.

SOUTH AFRICA

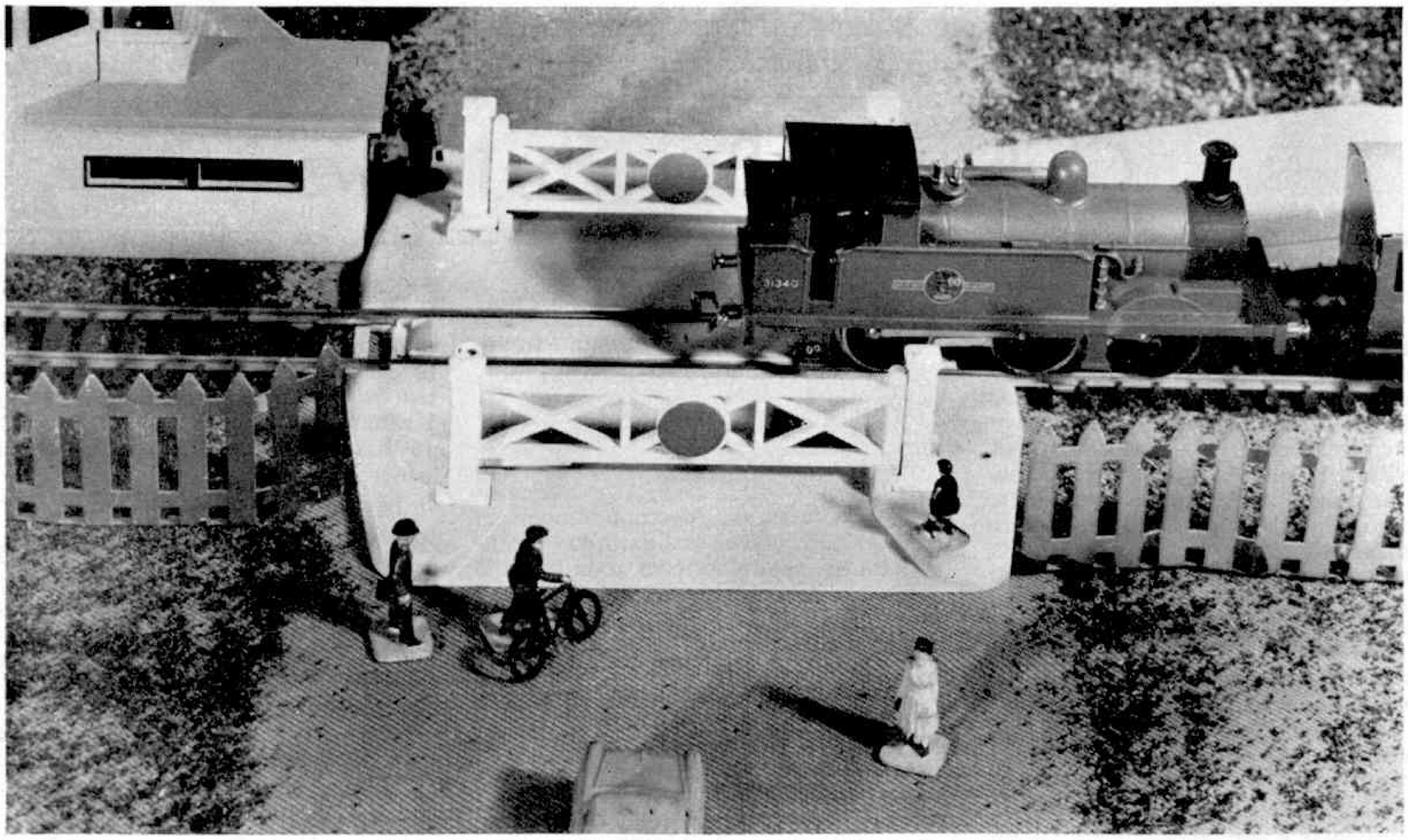
CAPE PENINSULA M.C.—The standard of Meccano model-building has improved during the past year. The Annual Group competition was won jointly by A. Ritchie and M. Arnold with their fine model of a mechanical shovel, and A. Smith won second prize with his mechanical man. *Secretary:* A. Ritchie, "Eldoret", Crescent Road, Kenilworth, Cape Town, S. Africa.

BRANCH NEWS

NORTH END (PORTSMOUTH)—The next big event in the Branch calendar will be the Summer Fair in June, and already preparations for this have begun. Mr. Leggatt's layout has been set up again and is being revised. Instead of having hills and tunnels it will be flat, and a branch line for a goods yard has just been added. Work on the Branch three-rail layout is continuing. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.



Getting on with the job! These enthusiastic young Meccano model-builders are members of the St. Annes Y.M.C.A. M.C. Reading from left to right, they are: Neil Teakle, Paul Strangeway, Andrew Dickman, Brian Pickett and Michael Elliott. In the background, keeping a fatherly eye on the good work, is the Leader, Mr. George Strangeway.



MORE "PEOPLE", A BREAKDOWN TRAIN AND NEW ROLLING STOCK

THIS month provides several interesting new items in Hornby-Dublo to talk about, and although our last chat dealt with miniature figures, I am sure you will not mind my telling you about a further addition in the Dinky Toys series, listed as No. 054 Railway Station Personnel. When the figures and other items in this new Set, which are shown in our advertising pages, are used in conjunction with the two Sets of figures already available, some remarkably realistic effects are to be obtained, particularly if one gives some

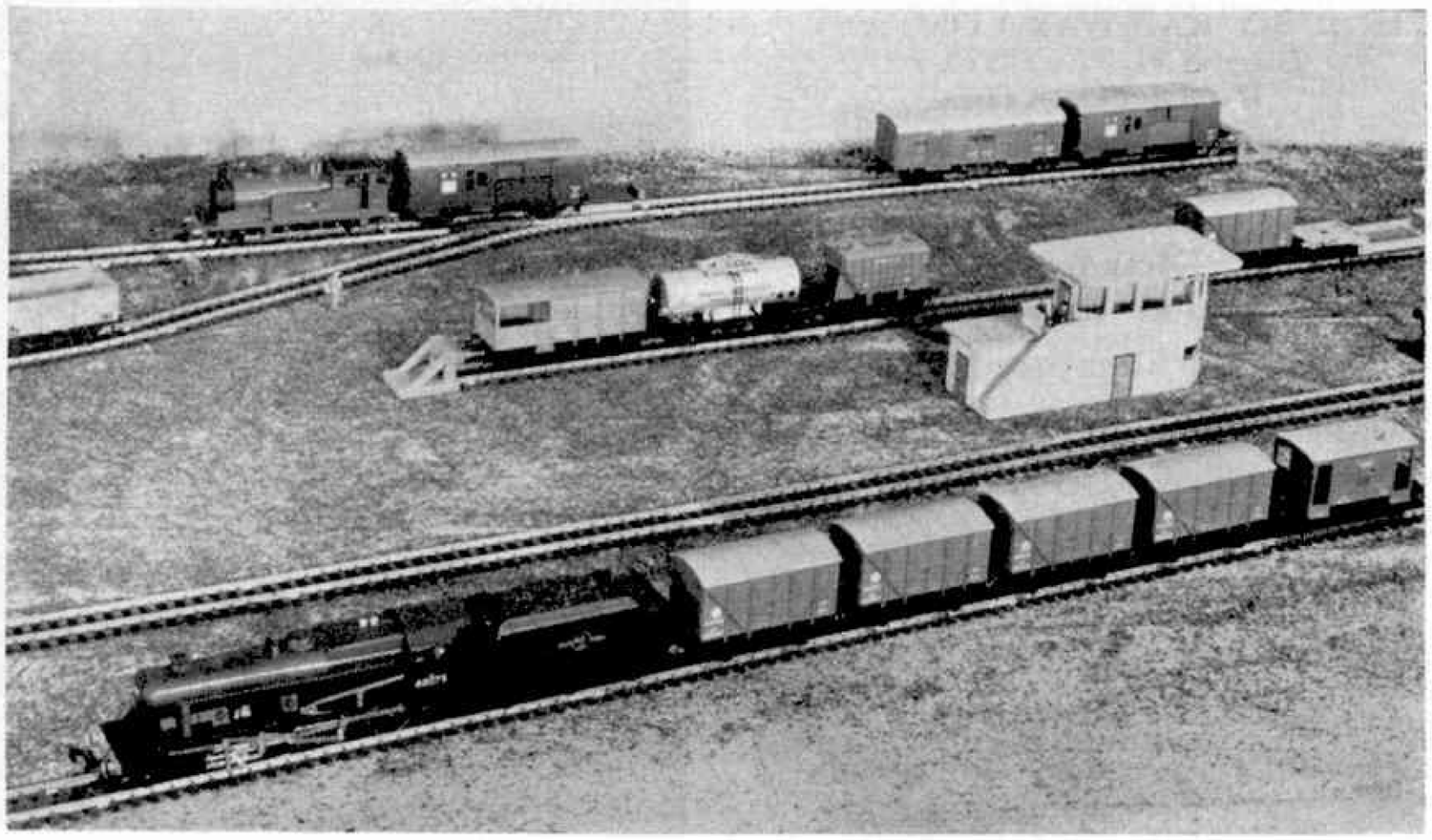
HORNBY RAILWAY COMPANY

By the Secretary

thought to the placing of the figures and other pieces. One figure from the new Set—a Man with his Bicycle—is included in the Level Crossing scene above, but I hope to be able to show you further pictures showing all the new items of Set No. 054 in due course.

As with the other figures and accessories we have already considered in this series, these new things look good enough by any standards to the naked eye, but the faithful character of their modelling is well worth

The Level Crossing scene at the head of the page includes miniature figures from the various Sets now available in Dublo Dinky Toys. Components of the newest Set, No. 054, are described in the accompanying article.



A special train of the newly-introduced Hornby-Dublo Banana Vans (right) makes its way along the main line behind a 2–8–0 Locomotive.

studying with the aid of a magnifying glass. Let us start with the Porter, smartly dressed in uniform, with his forearms extended so that he can be used with the Porter's Barrow which is also included in the set. The Barrow is very well modelled indeed, with its "openwork" type of frame and other familiar characteristics. To go with it are several pieces of luggage—a Trunk, a Case and that familiar item of the present age, the Travelling Bag.

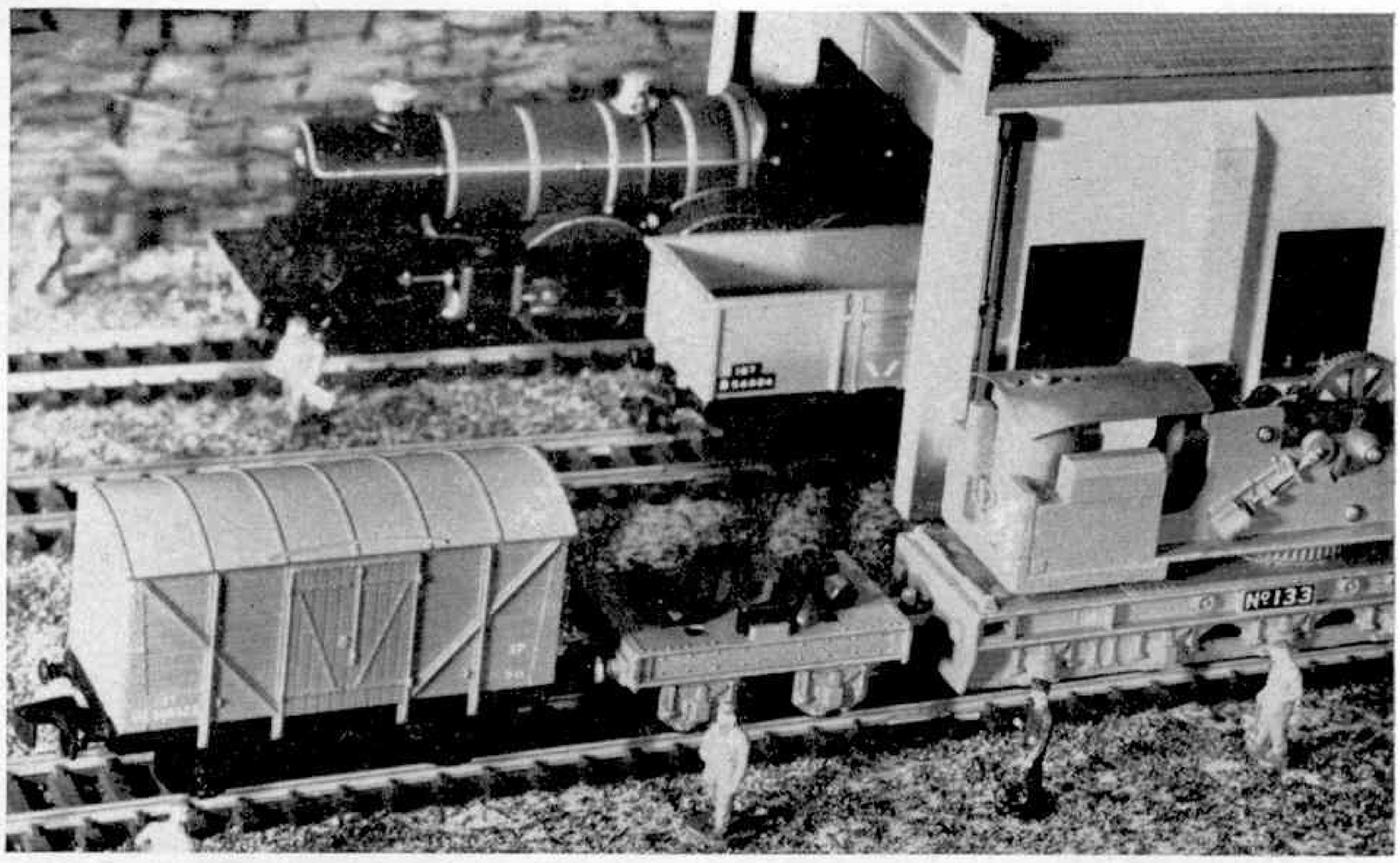
The Porter, Barrow and luggage, can be disposed about the platform in any number of ways. It would not be out of place for them to appear outside the station, too, as if the Porter were dealing with baggage belonging to a passenger arriving or departing by car.

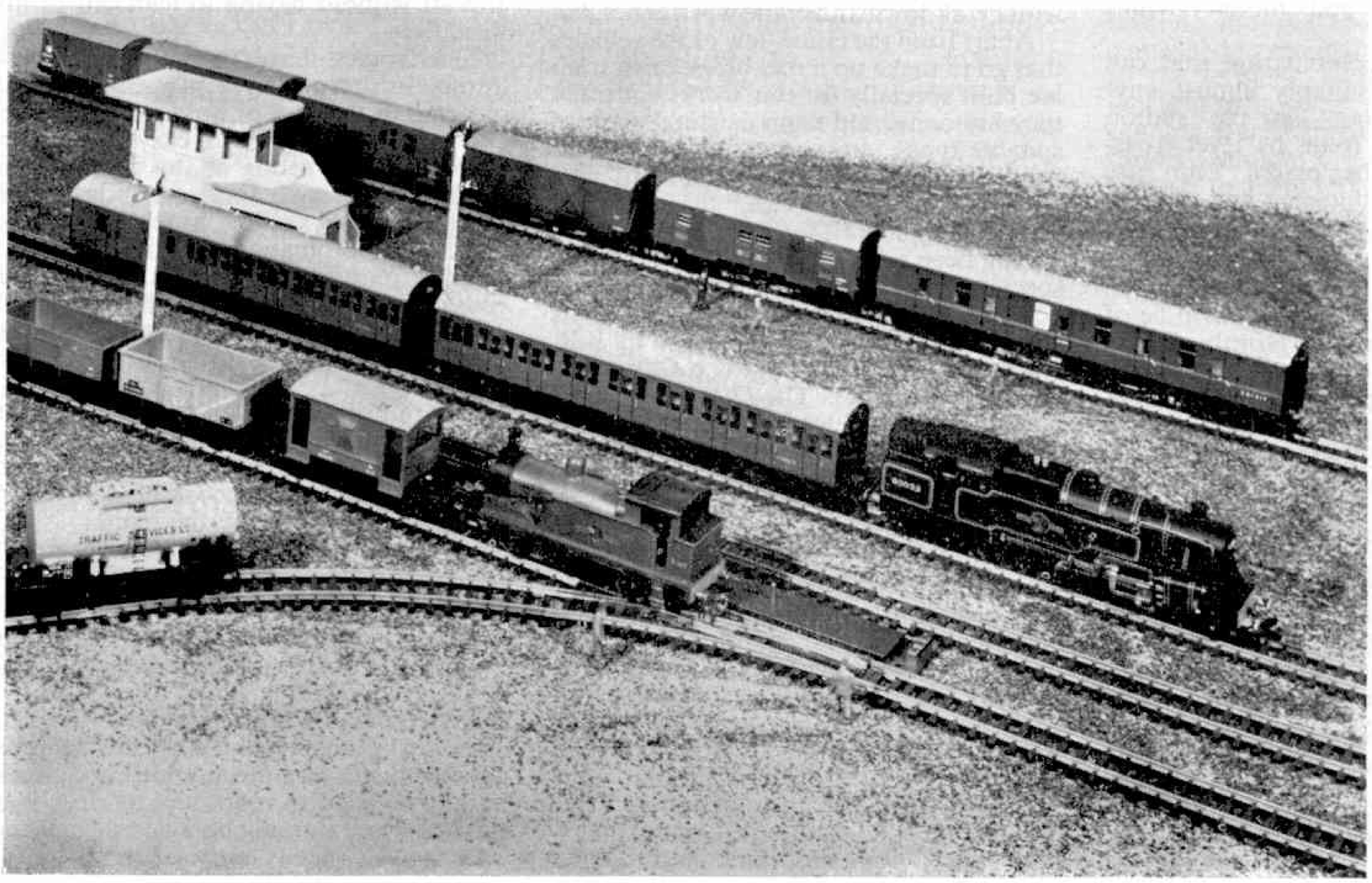
The Porter is suitable for any kind of station, but the next two items to be mentioned, a Mobile Bookstall and a Refreshment Trolley, with their respective Attendants, are specially suited to stations of the more important type. You would, for instance, have plenty of opportunity for their employment in a large terminal or through station assembled from the components of the No. 5083 Composite Station Kit.

Taking the Mobile Bookstall first, we find that this is moulded in a pleasing manner to represent a typical vehicle of this kind, having a three-tier stand, plentifully supplied with reading material, including, no doubt, copies of the *M.M.*! In view of the variety suggested by the attractive colouring of the publications represented, I am sure that anything Hornby-Dublo passengers may wish to read on their journeys can be provided. The Bookstall Attendant is a separate figure, smartly attired in a white jacket and clearly keen to please his customers as he pushes his perambulating bookshop along.

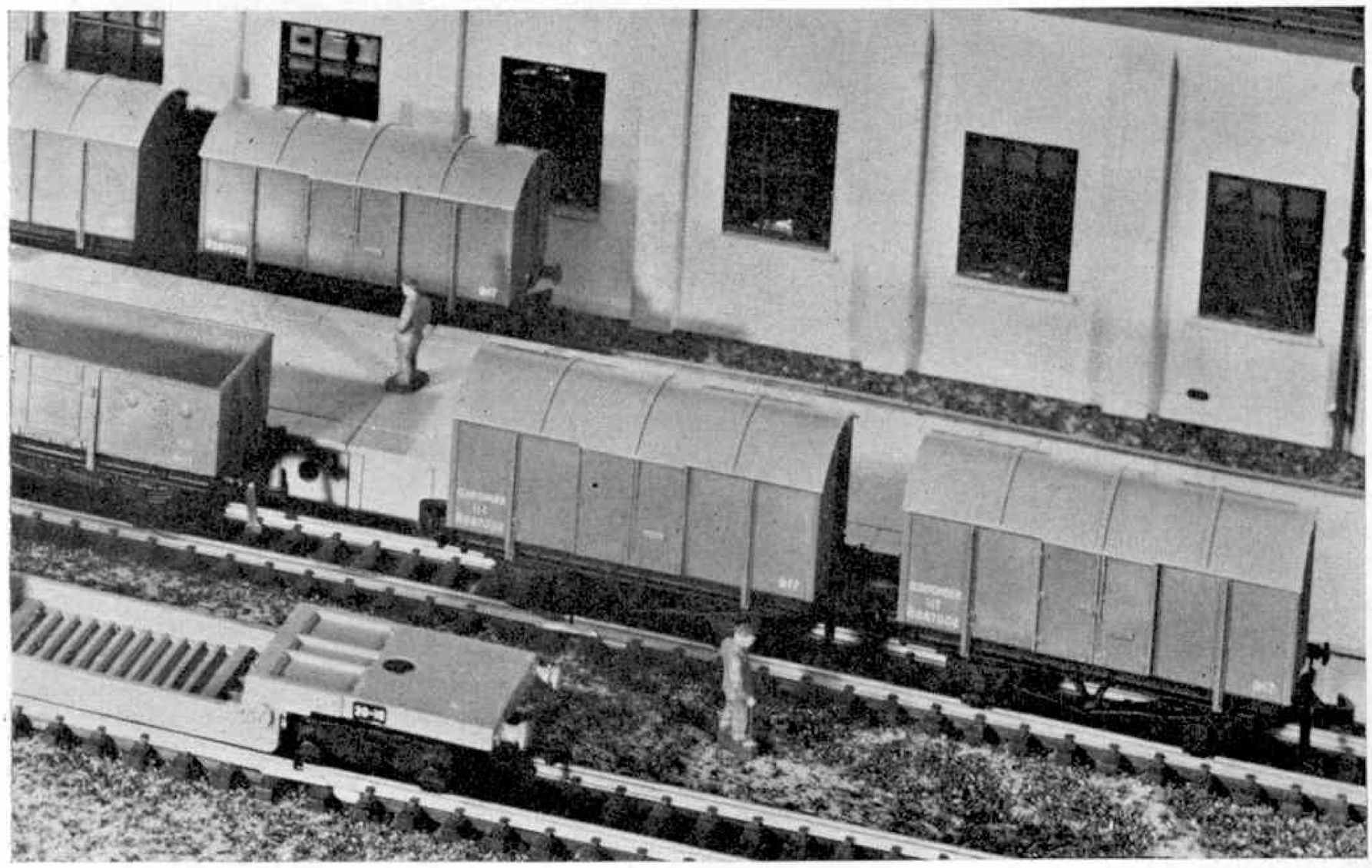
The Refreshment Trolley represents a popular piece of station furniture, recalling those cups of tea, fruit drinks, or eatables which are often in demand before the start of a journey, or are eagerly sought at an intermediate stop. The Trolley is modelled to represent the usual urns, one at each end, with a white-finished counter, at lower level, between them. The Woman Attendant is neatly dressed in a long overall coat, attractively coloured in green, with a cap to match. I can foresee, on many Hornby-Dublo platforms, some interesting groupings of the other figures round and about the Refreshment Trolley, as it is readily possible to change the grouping of the figures as required.

Because of its everyday character, the next figure, representing a Man with his Bicycle is particularly attractive. The cyclist and his machine are of separate mouldings, and this has made possible





Top: A close-up view of part of the Breakdown Train, with the Packing Van prominent in the left foreground. Next to it is one of the relieving bogies of the Breakdown Crane. (Left) The new Hornby-Dublo Suburban Coaches, Second-class and Brake-second respectively, form a train hauled by a 2–6–4 Tank Locomotive.



Characteristic features of the new Hornby-Dublo Gunpowder Van are well outlined in this illustration in which several Vans of this type are included.

some really characteristic modelling. The man wears a cap, a grey coat and trousers which are baggy round the ankles, as though he were wearing cycle clips. His left hand is thrust into his trousers pocket, with the result that his jacket on that side is swept back and sticks out behind him in a delightfully realistic manner. His right hand is extended, to rest on the handlebars of his "bike", a splendid piece of simple modelling which includes such details as the pedal cranks, as well as the saddle, handlebars and more obvious items.

Here again is a combination that can be employed very suitably almost anywhere on the layout—on the station platform, along the road, by level crossings and in many other places. I am sure you will be able to think up any number of likely situations.

* * * *

Now I come to a matter that will be of special interest to many Hornby-Dublo enthusiasts. The Breakdown Crane has been a familiar component in the Hornby-Dublo System for some time, and I have received many letters asking about suitable vehicles to run with it. This matter has been dealt with once or twice in these pages, and I am now glad to say it has been possible to introduce, as item No. 2049, a Breakdown Train. This is not a Train Set as such, as the boxed assembly does not include Rails, but it makes a splendid addition for running on a layout already in existence, particularly when this has reached the stage of requiring a second locomotive. The engine in charge of the Breakdown Train is the popular 0–6–2 Tank, possibly one of the best-known of all Hornby-Dublo Locomotives. There is really no need to describe the Breakdown Crane with its attendant relieving bogies and Match Truck, but you will be interested in the introduction, which has made the set possible, of the Packing Van. This is so called because the real van accommodates the miscellaneous lengths and thicknesses of timber, known as packing, used in connection with breakdown and crane work generally.

Apart from the crane, few of the vehicles that go to make up a real breakdown train are built specially for this work, but often they are converted from existing stock of suitable types. In a sense this course has been followed in Hornby-Dublo to produce the Packing Van, the standard Hornby-Dublo 12-ton Ventilated Van having been adapted for this purpose. Its special character as the Packing Van is denoted by the lettering carried and by its colour, which is the same shade of B.R. red as that of the Breakdown Crane and its satellite vehicles. The 12-ton Ventilated Van is still produced, of course, in its standard form.

* * * *

Suburban Coaches, Nos. 4081, 4082, 4083 and 4084, of a new style, with representations of the internal seating are now being introduced and pictures of the new vehicles appear in our advertising pages. In construction and details this new stock is fully up to the standard of the Corridor and Open Coaches so warmly welcomed by 00 Gauge railway owners. The Coaches are longer than the older Suburban type and their design is based on that of B.R. Standard compartment-type stock for suburban and similar short-distance travel. In B.R. maroon livery there are No. 4083, a First-second Suburban Coach with nine passenger compartments, and No. 4084, Brake-second having six passenger compartments and the usual section for the guard and for luggage. In S.R. green No. 4081 represents a Second class coach, and No. 4082 a Brake-second. The body-sides are of metal, pierced with the necessary window openings or "lights", as coachbuilders like to call them. The window openings are glazed with clear plastic so that you can look in to see just how good the representation of seating is. The bodysides are assembled on to a stout metal base, which carries beneath it a representation, in plastic, of the underframe details such as tie-bars, accumulator boxes, brake cylinder and the projecting domed end of the coach lighting dynamo.

The plastic ends of the coach bodies are modelled to show various details such as the jumper cables for lighting that are characteristic of the real vehicles. The roofs are plastic mouldings, too, and carry a convincing array of well-modelled ventilators. Above the guard's section on the Brake-second vehicles are representations of the periscopes provided on the real stock so that the guard has a view fore and aft without having to lean out of his window.

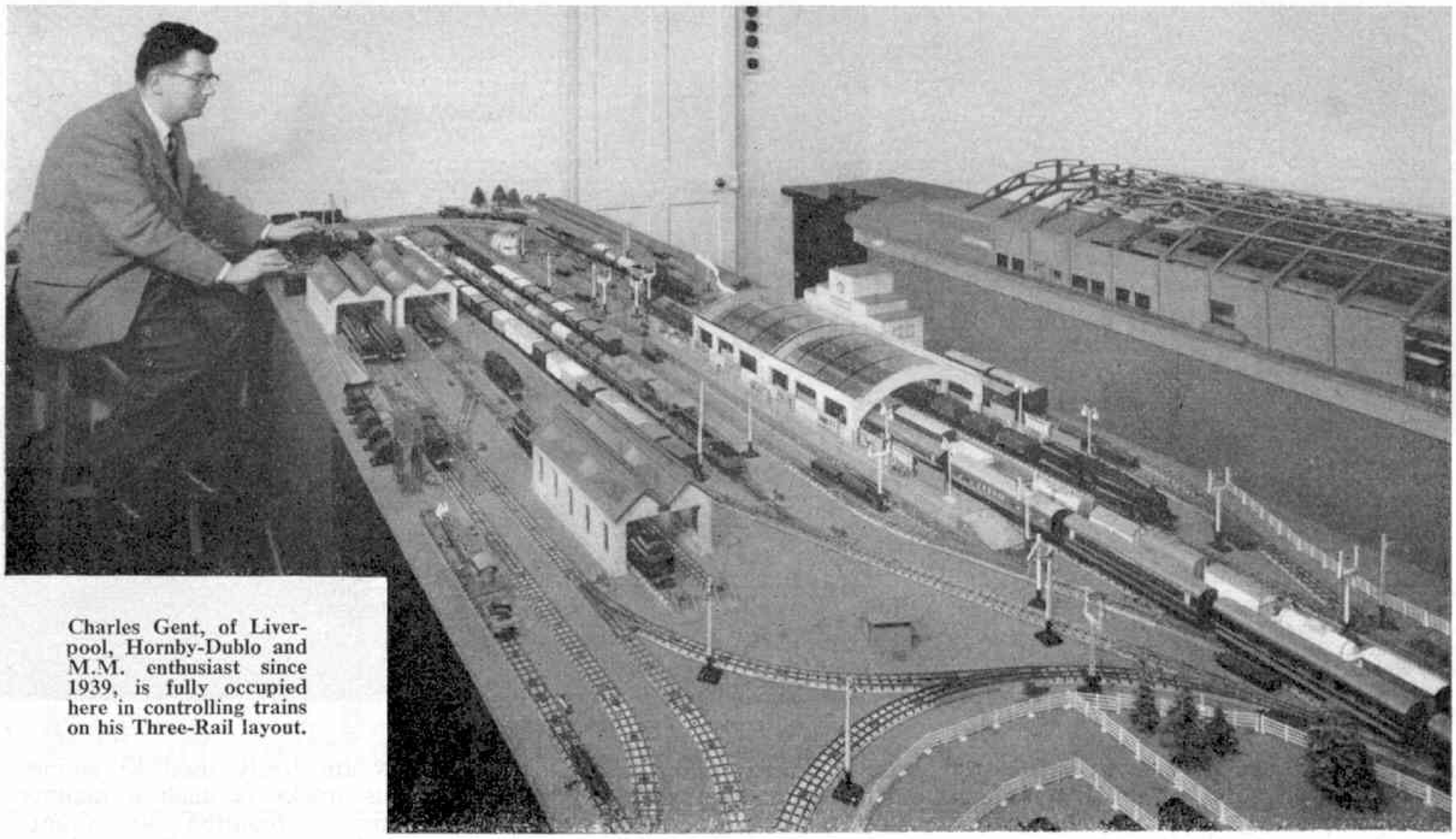
The bogies have one-piece die-cast frames incorporating a pleasing amount of detail in the way of dummy axle boxes and springs, and smooth, easy running is ensured by the fitting of the black nylon wheels that have been standard for Hornby-Dublo rolling stock for some time. The automatic couplings, moulded in black plastic, are attached at the outer ends of the two bogies on each vehicle. Of course, buffers are fitted as well, but these are for show, as is usual in miniature practice.

The tinprint design of the bodysides is very pleasing, printed lines indicating the doorways and the usual door and grab handles. First-class accommodation on No. 4083 is denoted by the figure "1" on each of the compartment doors concerned.

* * * *

Now we come to two new goods vehicles, No. 4303 Banana Van and No. 4313 Gunpowder Van. The Hornby-Dublo Banana Van is based on the B.R. standard design without steam heating arrangements, and the moulded bodywork is fully detailed to reproduce as closely as possible the external characteristics of the

(*Continued on page 175*)



Charles Gent, of Liverpool, Hornby-Dublo and M.M. enthusiast since 1939, is fully occupied here in controlling trains on his Three-Rail layout.

SEVENTEEN BY FIFTEEN—IN THREE-RAIL

An Extensive Liverpool Layout

CHARLES GENT, of Liverpool, whom you see in the picture above can be regarded as an old friend of the *M.M.*, as he first became a reader in December 1939. His interest in Hornby-Dublo Trains is of equally long standing, so that it was no surprise a little while ago to learn that over the years this keen reader has built up a very extensive Hornby-Dublo Three-Rail layout. The nature of the layout, and the photographs taken of it, are of such interest that I am very glad to have the opportunity of describing it in these notes.

The layout is situated in a room of generous proportions, 17 feet by 15 feet. Naturally, in planning and laying down the system the greatest possible advantage of this area has been taken. The actual baseboard is supported on trestles but these and other supporting members are not in evidence at all, as the space below the baseboard has been covered in so that the structure somewhat resembles a shop counter. Thus, the neat and tidy disposition of the railway equipment above the baseboard is balanced by an equal degree of tidiness "below ground."

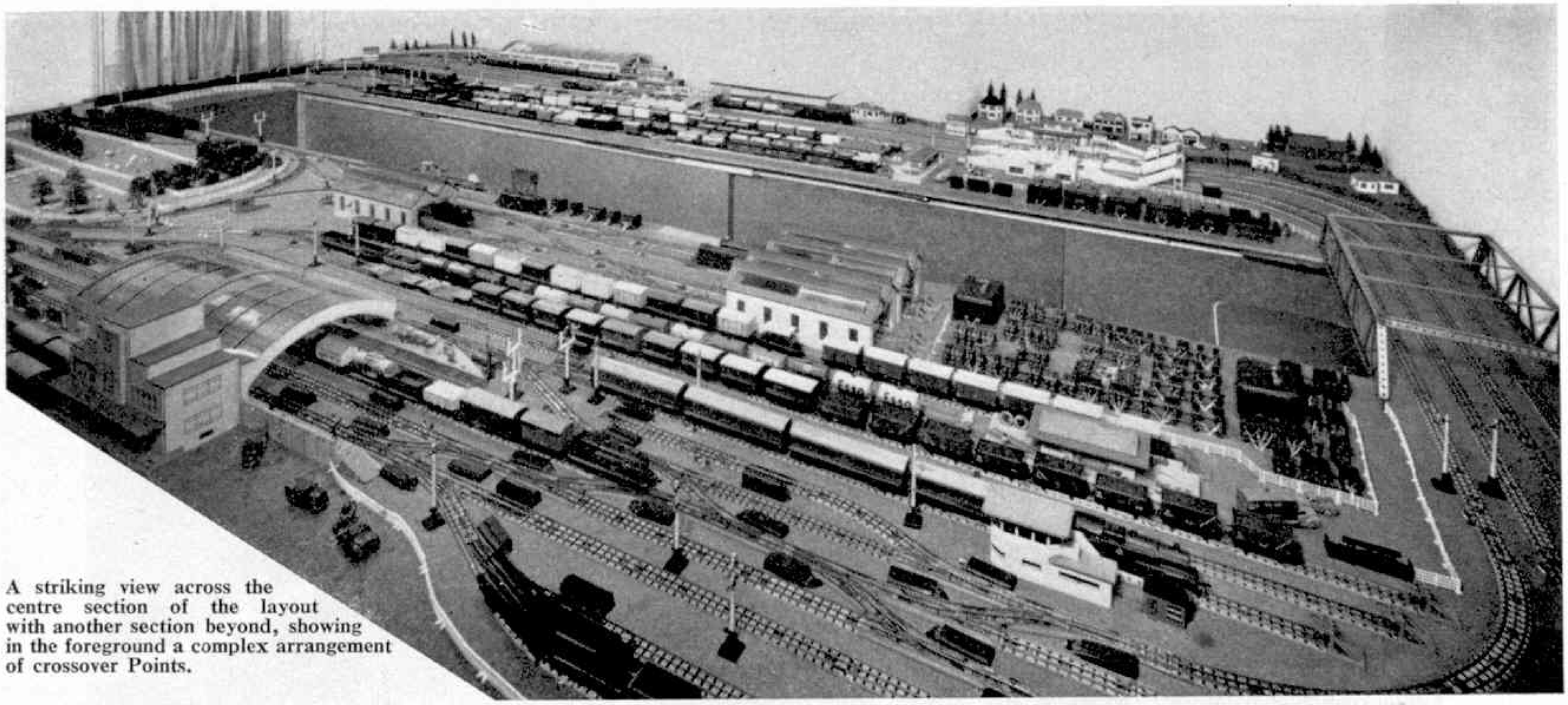
The baseboard is divided into three parallel main sections, one of which is shorter than the others. They are all joined together at one end by a connecting length at right angles. The resultant shape

BY LAYOUT MAN

of the actual baseboard is something like that of a capital "E", with its lowest stroke cut short. In addition, the two longer sections are linked, at the open end, by a bridge constructed of Meccano which makes a continuous main line circuit.

The rail plan is such that the central member of the, almost, "E"-shaped baseboard accommodates a main through station, and the tracks serving this are connected to the main running circuit and to the terminal section by a triangular junction arrangement. As there are four running tracks in the approaches to the through station, connections where these diverge to form two of the arms of the triangle are somewhat complex. Not only are there several Diamond Crossings, cheek by jowl with one another, but Points are arranged in such a manner that trains can run from one track to another without difficulty. The provision of the triangular junction makes it possible for trains to be routed out of the main terminal to traverse the continuous main line in either direction as required, and finally to return to the terminal.

The main running area consists of four continuous tracks, worked as two up and two down. The through station is assembled from components that were available in the earlier days of Hornby-Dublo. This building consists of two arched roof sections, with platform extensions and a main building, the latter providing road access for passengers. On this section of baseboard the main locomotive sheds are located, and there is standing space for some thirteen engines. There are three shed buildings, each



A striking view across the centre section of the layout with another section beyond, showing in the foreground a complex arrangement of crossover Points.

spanning two tracks, and engines are turned when required by means of a triangular layout, instead of by Turntable.

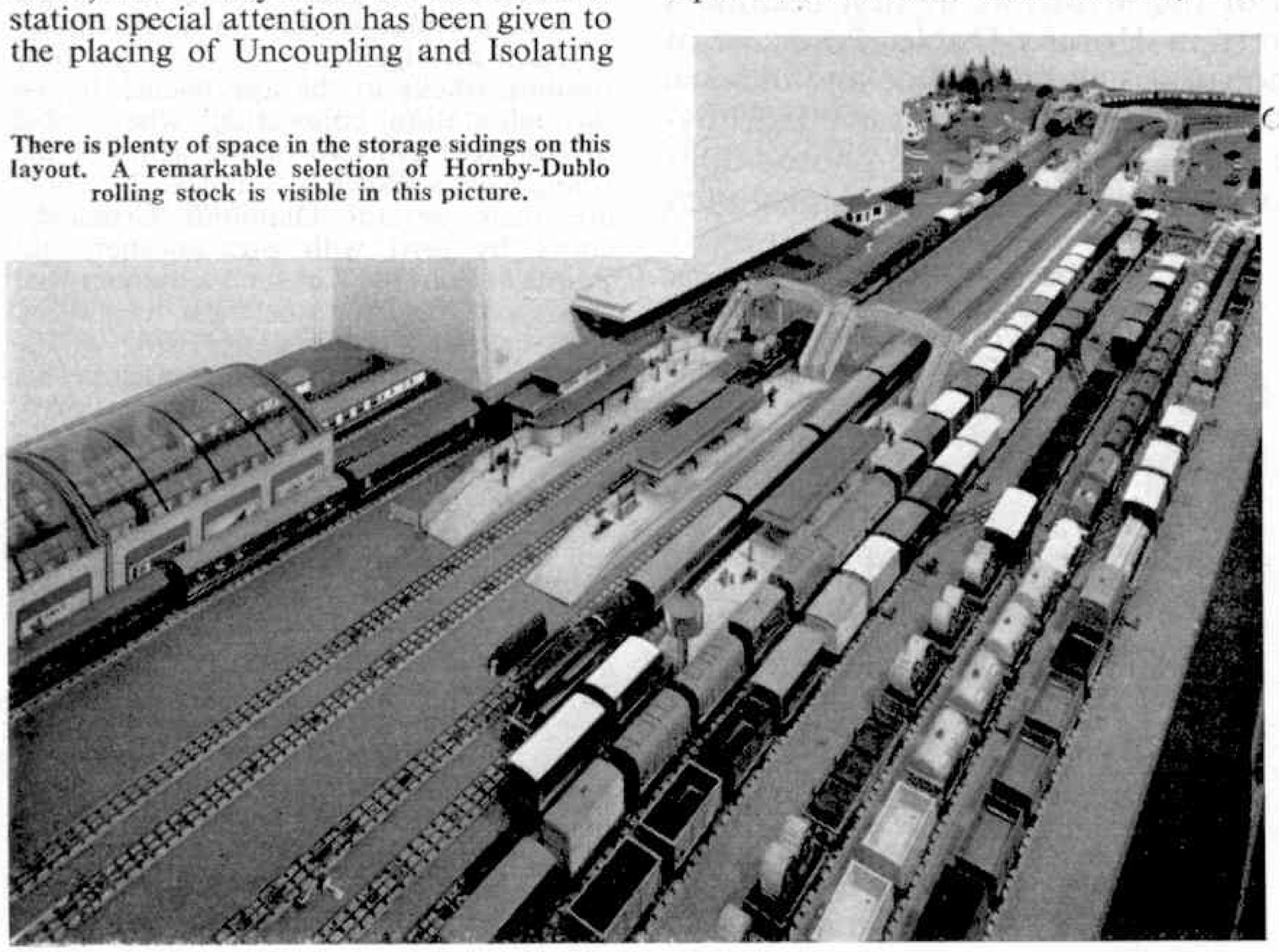
One track is reserved for the Breakdown Crane. Following practice elsewhere on the layout, this particular track has an Uncoupling Rail, so that the Crane can be shunted into its siding by a Locomotive on its return from any job down the line where its services have been called for.

The terminal station, still incomplete when the photographs were taken, has six platforms in all, four of them being long enough to deal with trains of four or five bogie Coaches. In addition to the platform lines there are two empty carriage roads, and a bay line. In the terminal station special attention has been given to the placing of Uncoupling and Isolating Rails, so that the engines of arriving trains can be detached and can then stand in a buffer stop section that can be switched out for the time being, while another locomotive comes on to the other end of the train to dispose of it.

The importance of this feature in connection with layout planning and arrangement has often been mentioned in these pages. Space restrictions frequently prevent the full application of such schemes, Mr. Gent has not been slow to use the space available to advantage.

* * * *

The principal storage sidings and goods depot form another main section, and Points are freely used to connect the various tracks in such a manner that movements required to shunt and marshal trains can readily be carried out. There is accommodation for main line corridor stock, and here the coaches forming the long-distance expresses are quartered.



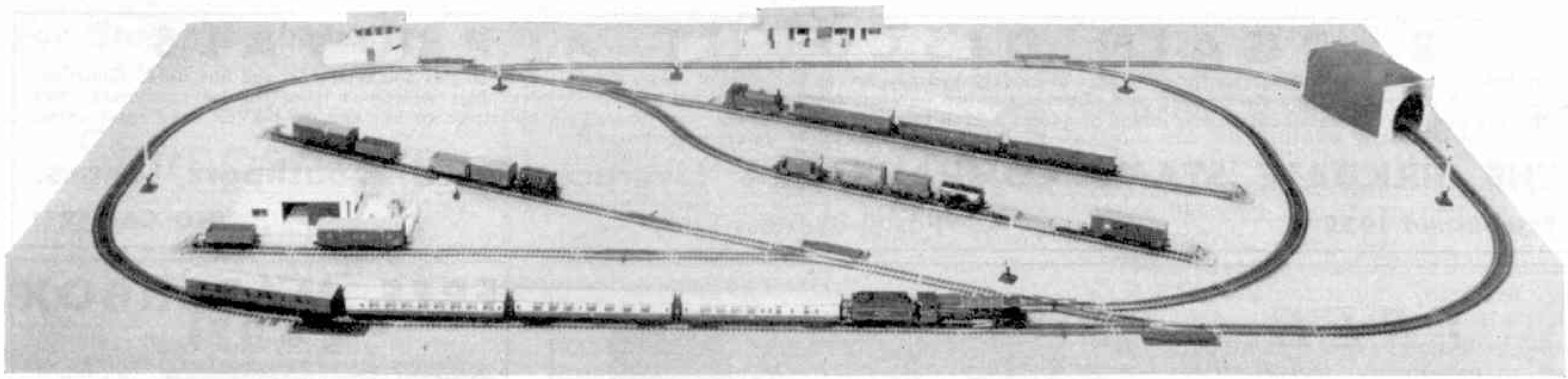
There is plenty of space in the storage sidings on this layout. A remarkable selection of Hornby-Dublo rolling stock is visible in this picture.

On the same section this four-track main line serves two suburban stations, one consisting of a through type station with building, and two island platforms, the other being built up in similar manner, but with one island platform. In the assembly of the larger of these stations the wooden buildings available in the earlier days of Hornby-Dublo have been brought into use. Connections between the platform ends are made by means of two of the standard Footbridges. The other station consists of a combination of wood and metal structures, the latter being of the type standard in Hornby-Dublo until fairly recently. Here again, Footbridges are used to connect the platforms, which are very well populated with miniature figures of various kinds.

The disposition of main running lines is such that the two up and the two down tracks run alongside one another, instead of the up and down tracks being arranged alternately. This means that express passenger trains may readily pass slower-moving traffic in the same direction on the adjacent track, and realistic overtakings of this kind take place regularly in the course of a running session.

* * * *

As might be expected, a considerable amount of rolling stock can be called on for the various services, the most recent addition for main line express work being a train of Hornby-Dublo Pullman Cars. When the original notes for this article were prepared the Co–Co Diesel Locomotive was regularly (*Contd. on page 174*)



A view of this month's layout, showing signals and suitably-arranged stations.

ANOTHER DIAMOND CROSSING SCHEME

Monthly Two-Rail Feature By Linesman

DIAMOND Crossings are now well established in the Hornby-Dublo Two-Rail system, and this month we show a track formation which includes a Right Hand Crossing. It will be remembered that we dealt with the Left Hand Diamond Crossing in the January M.M. The layout we are discussing this month follows the familiar oval pattern and will fit on a baseboard measuring 8 feet by 4 feet 6 inches. On close examination it will be seen that the track offers a choice of two routes for the train to follow.

An inner loop line is provided, and is crossed by the long siding which leaves the main line at the lower right hand end, the Diamond Crossing being prominent adjacent to the Points. The angle of the Crossing is 22½ degrees, which means that no special rails are needed with it, that being also the angle of turnout of the Points.

Both arms of the Diamond Crossing are electrically independent so that no conflict of current occurs if the component is used to allow a track fed by a Power Control Unit (or batteries) to cross one with a separate source of power supply and control.

There is no preferred direction of travel for the trains, but anti-clockwise running is recommended so that shunting operations can be carried out by use of the Uncoupling Rails, the engine backing the train into sidings. The locomotive is then free to leave the vehicles and proceed to another part of the layout. Incidentally, two trains can be accommodated, each taking a turn at travelling. The isolating section on the main line can be used to hold an engine while another makes a journey from one group of sidings to another, or continues to traverse the rest of the main line via the inner loop.

One Power Control Unit only is required for this layout, as the main line comprises only a single track. All Points shown are hand operated, as also are the Uncoupling Rails, but these can be Electrically Operated if this is desired.

ITEMS REQUIRED

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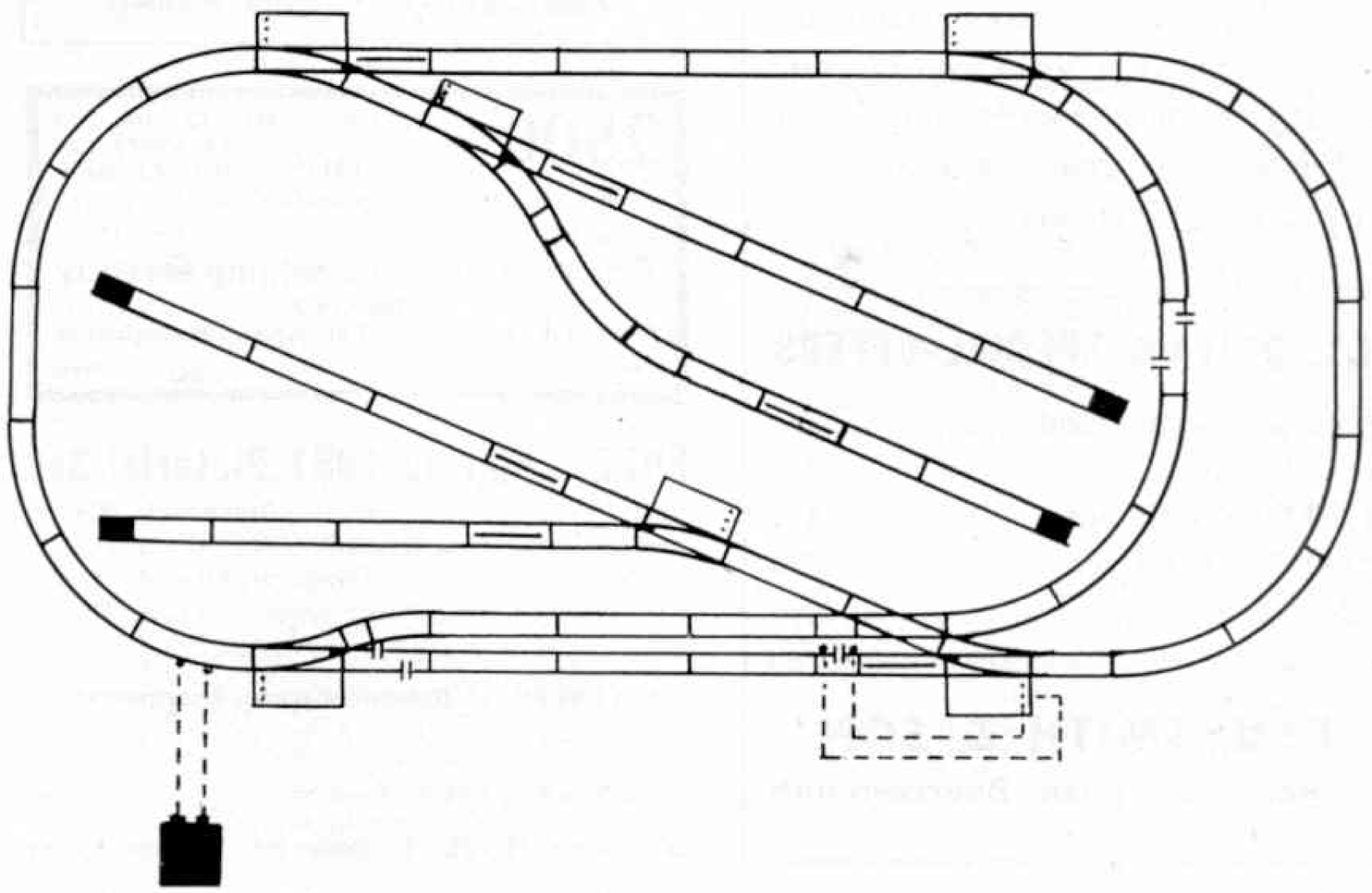
3	Curved Quarter Rails	2712
23	Straight Rails	2701
2	Straight One-Third Rails . .	2703
1	Straight One-Third Single Isolating Rail	2742
8	Straight Two-Third Rails . .	2702
2	Straight Two-Third Double Isolating Rails	2739
6	Uncoupling Rails. Hand Operated	2745
4	Switch Points Right Hand . .	2728
2	Switch Points Left Hand . .	2729
1	Right Hand Diamond Crossing	2734
4	Buffer Stops	2450
1	Power Control Unit	

The scheme in diagrammatic form, with details of wiring.



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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 170

For Stamp Enthusiasts

Stamps from Three Islands

By F. E. Metcalfe

THREE islands in the West Indies—St. Christopher, Nevis and Anguilla—are generally known, particularly to stamp collectors, as St. Kitts. That description was heard a good deal last summer from collectors interested in modern colonial stamps, for on July 15, 1961, a handsome set of four stamps was issued to commemorate the centenary of the first issue for Nevis. Yet, although it is now more than a century since this group of lovely islands had their first stamps—some much bigger and more important countries have not yet reached that point in philatelic history—this may, perhaps, be their last issue, as, taking the St. Kitts group together, they will form one of ten in the proposed West Indian Federation. Consequently, they may all join in one set of stamps, which is what is proposed by the Malayan Federation so far as the higher values are concerned.

St. Kitts Islands are exceedingly popular with both Commonwealth and American stamp collectors, and it must be admitted that their stamps have had a lot to do with the fostering of this popularity. Christopher Columbus is credited with first coming across this group of islands during his second voyage to America, in 1493, a year after his discovery of that continent. The first Britons to settle there did so around 1650, when they discovered the island of Anguilla. The French, always active in that part of the world, made St. Kitts itself their headquarters, and we—under Captain Thomas Warner—formed another settlement, in Nevis. Although we enjoyed comparative prosperity in our islands, fights were frequent with the French in their domain, and the trouble continued until 1783 when, at the Treaty of Versailles, the group of islands was ceded to Britain—including Nevis, on which a year before the French had securely entrenched themselves. The treaty did not end the dispute between France and ourselves, and even as late as 1796 the former country had a final shot at capturing Anguilla.

Quite a lot could be written about the history of these islands, and I cannot resist mentioning that at Nevis Lord Nelson, who was the Commander of the Leeward Island Naval Station, married a widow named Nisbet. It was also on this island that one Alexander Hamilton, the son of a Scottish planter, whose claim to fame arose from being one of those who drafted the American Constitution, was said to have been born. At least, you can still see his alleged birthplace there.

Nevis was the first of the group to issue stamps, with a set of four values, the design of which was taken from the Great Seal of the Colony, depicting a woman pouring spring water from a jug into a bowl, and thereby symbolising the health-giving properties of the island's mineral springs. Fortunately, the new commemorative stamps depict the originals, and thus for a very small sum we can all show in our albums what the originals looked like. In passing, I should mention that the commemorative issue is perhaps the last one which Waterlow and Sons (who, although not the printers of Nevis's first issue, have—as all collectors know—been printing colonial stamps for very many years) will print.

Nevis's first issue, with certain philatelic changes, continued to be current until 1879, when very ordinary looking stamps, of the head type, appeared. Most of these stamps are rather expensive, but they are too dull in appearance to make us feel we are missing much. In the meantime St. Christopher issued a set of stamps in 1870, also bearing a portrait of the Queen and also decidedly dull in appearance. In 1871 St. Kitts, as it was called then, and Nevis formed a joint presidency under the Leeward Islands Act, of which they were part, and from 1890 until 1903 only Leeward Island stamps were used.

Then, in 1903, came the big change—a set of stamps, of two designs, was issued, one showing the Nevis Great Seal as already described and the other the Great Seal of St. Kitts, showing Columbus looking through a telescope.

I need not tell *M.M.* readers that Columbus never used such a gadget, as the telescope had not been invented. In 1920, bigger St. Kitts–Nevis stamps appeared, which depicted not only the Great Seals as previously but also the head of the then reigning monarch, King George V. The next philatelic move of importance was the issue, in 1923, of a series commemorating the tercentenary of the founding of the colony of St. Kitts, in 1623. As the stamps went up to £1 face (and pounds really meant something then) very few were sold, which is the reason why today such sets are beyond the reach of most of us.

There were the usual Silver Jubilee and KGVI Coronation issues, inscribed "St. Christopher and Nevis", and then, in 1938, came the first KGVI definitive issue, a "St. Kitts–Nevis" set of ten values, from ½d. to 5/–. It is at this point that most of us can really come in, as these stamps are mostly quite reasonably priced, and there are some nice shade varieties for the many collectors who like such variations. (A full list of these varieties will be found in the Commonwealth KGVI Catalogue.)

I have not much space left, but starting from the KGVI period there are several inexpensive stamps to bear in mind, such as the pictorial issue which brought Anguilla into the picture for the first time, the Alexander Hamilton commemorative to which I have already referred and, of course, the latest Nevis commemoratives which are proving so popular all over the world. And now I am afraid I must leave it to you to decide if you want to collect St. Kitts. You certainly could do worse, and a quite nice little show would not cost too much.

Stamp Gossip

Postal Centenaries

SINCE Great Britain commemorated the centenary of her first postage stamp, one country after another has been able to follow suit, and some interesting stamps have resulted. Now Seychelles has come along with a set of

three stamps commemorating a centenary—in this case that of its Post Office. One of these stamps is illustrated here, and it will be seen that it depicts the postal cancellation on a Mauritius postage stamp, for a century ago Seychelles used the stamps of the latter country.

The Seychelles is an archipelago of 99 islands, and until 1903 it was administered from Mauritius. These islands were unoccupied until 1768, when the French—then in control in that part of the world—

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 168

occupied them. In 1794 the islands surrendered to the British, and in 1814, under the Treaty of Paris, Britain's possession was acknowledged. But it was not until December 11, 1861 that the first Post Office, a branch of that belonging to Mauritius, was established in Victoria, the capital. Seychelles had to wait until 1890 for its own stamps; in the meantime the postal cancellation B64 distinguished the Mauritius stamps that had been used in Seychelles. The new special issue will be on sale until the end of May (unless it sells out before then) and undoubtedly it will be an interesting addition to a "Colonial" collection, or one devoted to postal history.

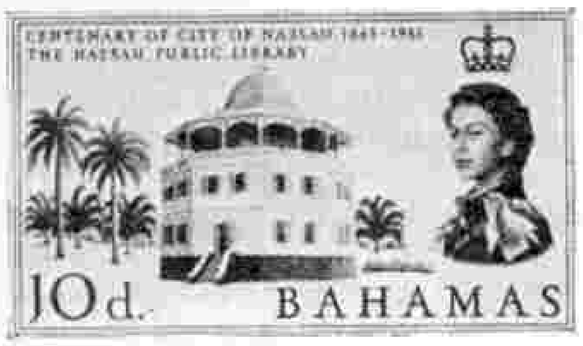
SOME BADGE

Another theme with growing popularity among collectors has to do with the Boy Scout movement, and as new stamps of this category are appearing all the time collectors are not only kept busy, but are forming for themselves really worthwhile collections. We all know that the founder of the movement was Lord Baden Powell, and that all the off-shoots, in whichever country they may be, owe their inspiration entirely to that great man. One or two countries would like to forget this fact, and have others do the same, so when they issue stamps connected with Scouting they take great care to omit even the Scout badge.

Not so Thailand—or Siam as many of us still call that country—where, to commemorate the fiftieth anniversary of the founding of their Boy Scout movement they recently issued a set of stamps showing the Scout badge. But just look how they show it! I got a glass on that face, and I think it is meant to depict a tiger, but it is very interesting, as is the set itself, and I know many *M.M.* collectors will have bought one by now. (No doubt you recall the fine Togo stamp showing the Scout badge and a portrait of Lord Baden Powell which I illustrated in my November 1961 "Gossip"; this stamp, too, was one of a set.)

RAILWAY CENTENARIES

Thematic collectors who take railways as their subject must often feel sorry when they look at their collections and consider the stamps issued by many countries to mark the centenaries of their first railway, and then note the absence of any similar Great Britain railway commemorative stamp. Really, there is no excuse for our authorities not having honoured the centenary of Britain's first steam railway—the Stockton and Darlington—which was also the first public steam railway in the world. So we have to be satisfied with the sets from countries which are more enterprising from a philatelic standpoint, and the pair of stamps issued by Pakistan on December 31 last year help to console us, for these two stamps are quite attractive—one of them is illustrated here. Messrs. De La Rue were the printers, and while the 13p value depicts an "Eagle" type locomotive which was in use on the Scinde Punjab and Delhi Railway in 1861, the 50p stamp shows a present-day diesel electric engine of the type now being introduced throughout the Pakistan railway system.



OTHER DAYS

In January this year the Bahamas commemorated the centenary of its capital city, Nassau, and as part of the celebrations there was the inevitable issue of a set of stamps. Of course, our colonies are always very modest about the face value of such issues (so unlike many foreign countries, who believe in making the collector pay as much as possible for his or her fun) and the total face value of these Bahamas commemoratives only amounts to 1/6, which means that a set should only cost you around 2/– from your dealer. There has been quite a number of special issues lately but I have selected that of Bahamas because one of the designs reminds one of other days. This particular stamp, illustrated here, shows the Nassau Public Library as it is now, but guess how that octagonal-shaped building started out. Yes, the library of today was Nassau's prison of other days. Who says there is no real progress?

A FORTUNATE READER

Some weeks ago I had a very interesting letter from a young stamp collector in Islington, London, who has an aunt and uncle in Sydney, Australia. He had been asking them for used Australian stamps and, like really good aunts and uncles, they had not only sent him some of the very attractive mint Australian stamps, which a very progressive Post Office has issued since the war, but—lucky chap—they have offered to allow him ten shillings (sterling) a month to spend exclusively on British Commonwealth stamps. His query

(*Continued on page 174*)

By E. W. Argyle

Locomotives On Stamps

THE "Austria", the first Austrian locomotive, was built in 1836 by Robert Stephenson for the Kaiser Ferdinand Northern Railway, its works number being 128. It was of bar-framed construction, with a boiler 8 ft. 3 in. long and 3 ft. 2 in. in diameter, and a domed firebox, the total heating surface being about 400 square feet. The total weight of the engine and tender was fourteen tons.

The first Italian railway line was laid in 1839, and the service inaugurated on October 3 of that year, when the first train steamed out of Naples headed by the French-built locomotive "Bayard", a 2–2–2 type, which weighed 12 tons and had a top speed of 40 Km. per hour. On the stamp reproduced above this locomotive is shown alongside an articulated three-car electric motor-train, type ETR200, built in 1936-38, which on July 20, 1939, achieved a world speed record of 203 Km. per hour on the Fidenza–Piacenza section. The coaches weigh 112 tons in running order and have 100 seats, and carry only First Class passengers.

Buses from yesteryear. On left is the 1927 Leyland PLSC "Lion", originally a 31-seater. On the right is a 1930 Leyland LT1 "Lion" which originally had 30 seats. Standing on the lower step of this vehicle is Mr. F. V. LeTall, Secretary of the Lincolnshire Vintage Vehicle Society.

David Kaye's monthly article on buses appears below. On this page also the same writer briefly relates the story of the Lincolnshire Vintage Vehicle Society.

Calling All Bus Spotters

WHEN the Prince Regent built his fantastic palace with its onion-shaped domes at the little fishing village of Brighthelmstone, more than 150 years ago, he little thought that it would be the mecca for coach enthusiasts each spring. But if you travel to Brighton on either Saturday, May 5 or the following day you will be able to see the eighth annual British Coach Rally in progress. I hope to be present to report on this event in the July *M.M.*

Although the first British Coach Rally was held at Clacton-on-Sea in 1955, it found a permanent home at Brighton from 1956 onwards. Numbers have never subsequently reached the grand total of 81 entries in that very first event, but after slumping to only 54 in 1956, they reached 71 last year. In 1955, 48 coaches set out from London, 20 from Cambridge, seven from Bedford and six from Norwich in the first stage of the rally, all converging along specified routes to the Essex seaside resort. Nowadays, they all begin this initial test in London, although the actual route to Brighton may differ from year to year. Then follow tests along the sea front, to show the drivers' skill and the manœuvrability of the vehicles in restricted spaces, acceleration, braking and parking. The final phase of the rally consists of the Concours d'Elegance, when coaches and crews are inspected for smartness.

It is interesting to note that the overall rally winner during the past four years has been an A.E.C. "Reliance". In 1958, Sheffield United Tours 286 (3286 WB) carried off the trophy; in 1959 it fell to Straws of Leicester with their URY 999; Sheffield United Tours 291 (1291 WE) regained the premier award in 1960 but last season it went to Samuelson's New Transport's 446 BXD. Sheffield U.T., however, had the compensation of winning the Concours d'Elegance with car 318 (1318 WA) in 1961.

The first foreign entry was in 1958, when a Leyland "Worldmaster" with a 46-seat Verheul body was entered by the Dutch operator Nederlandse Buurt Vervoer Maatschappij (Zeise). In the following year there were two vehicles from abroad—a Setra from Germany and a Scanis Vabis from Holland. In 1960, four foreign coaches could be seen, including a Belgium-owned Fiat. However, last year this competition dwindled suddenly to a single Fiat from Ostend. Let us hope that more come to Brighton this spring.

A rarity at these rallies is the double-decker. At Clacton, Cullings Coach Service of Norwich entered CRN 59, a Daimler CVD6 with a Strachans 55-seat body, and in the following year, at Brighton, a similar chassis bearing a Wilks & Mead 53-seat body was sent by Premier Travel of Cambridge (HVE 403). Last year, West Wales entered their Guy "Wulfrunian" XBX 450 with its 77-seat East Lancs. body. I wonder if Silver Star of Porton (near Salisbury) will send one of their Leyland "Atlantean" coaches this year?

One attraction at these gatherings is the appearance of some of the veterans, now preserved by enthusiasts. In last December's *M.M.* we showed you a photograph of Pompey's No. 1 Thorneycroft at the rally. In 1961 the prize exhibit was London Transport's T 219, one of the original Green Line coaches. It could well be a Gilford coach or a London General "NS" class double-decker in 1962.

Some vehicles are entered for two successive rallies, and at least two buses have been to three of them. They are the Sentinel 657 CMT, with its 40-seat Whitson body, belonging to Best & Sons of Wembley (1956/8/9) and 999 FPG, a Bedford SB3 with a Plaxton 25-seat body owned by Comfy Coaches of Farnham (1958–60).

One final point about these vehicles which I find intriguing concerns the number plates. It is obvious that some firms ask for special registrations. For example, Comfy Coaches of Farnham (Surrey) have shown at various times 999 FPG, 999 OPB, 999 JPF and 999 PPL. The Creamline Group (which includes Liss & District and Parlane of Aldershot) have a liking for centuries, e.g. PCG 100 (Liss), PCG 200 (Cream), SHO 800 (Cream), TAA 600 (Par.), TAA 700 (Liss), TAA 800 (Cream), TAA 900 (Cream), etc. Others again ask for the first number of a series (e.g. HFN 1, NVE 1, TBD 1, ULX 1, YDG 1).

Incidentally, I shall be pleased to meet any *M.M.* reader at the rally on the Saturday afternoon, and if you drop me a line I will suggest a rendezvous.

TRANSPORT MUSEUM FOR LINCOLN?

IN the December 1961 *M.M.*, I described how veteran buses, coaches, trolleybuses and tramcars are being preserved by groups of enthusiasts and private individuals up and down Great Britain.

One of the most flourishing and active of these groups is the Lincolnshire Vintage Vehicle Society, which has a fleet of eight public service vehicles and thirteen motor cars varying in age from a 1918 Calthorpe Coupé to a 1937 Austin 10 Saloon.

From a bus spotter's point of view the most interesting exhibit is a 1929 Leyland L.T.1 "Lion" operated by the City of Lincoln from its birth until withdrawn in 1949. It then suffered the indignity of having all its windows removed so that it might act as a snow plough, but after five years of inactivity awaiting a blizzard that never came it was sold for scrap.

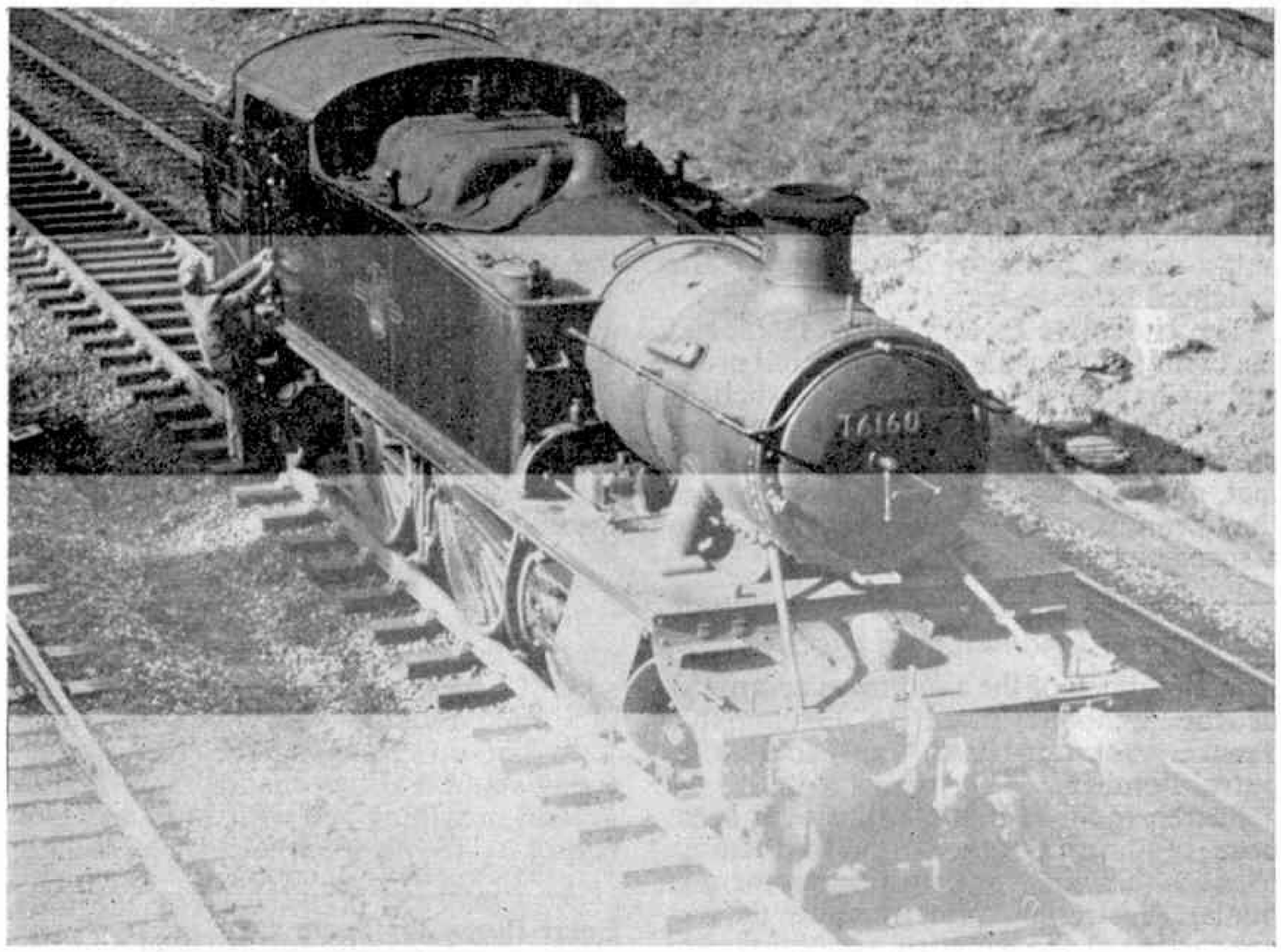
Fortunately, Mr. F. V. LeTall, secretary of the L.V.V.S., discovered the bus (No. 5, VL 1263) in the scrapyard of Mr. Sid Twell, of Ingham, early in 1959. Mr. LeTall's enthusiasm so impressed Mr. Twell that he presented the yet unborn society with the derelict vehicle. Its 32-seat body was made by the local firm of Messrs. Applewhite, and was one of only four ever produced of this design.

The December 1961 issue of the society's quarterly magazine *The Con-Rod* reported the efforts of the committee to acquire a site near Lincoln on which to build a garage to house its fine old vehicles.

(*Continued in col. 3 on next page*)

Test Strips For Printing: A Matter Of Contrast

By H. G. Forsythe



NEGATIVES are a photographer's most valuable possession. Always treat them with the greatest care. Scratches and finger marks on negatives make good printing impossible. If you can, keep your negatives in individual envelopes and always handle them by their edges.

In contact printing, paper and negative are placed together in the printing frame. It is essential that the emulsion sides of the negative and contact paper face each other. Usually the emulsion is on the dull-looking side of negatives while on the paper it appears shiny.

Getting exposure right is very important in printing. The best way of doing this is by means of *test strips*. At first, try a full-sized piece of printing paper, but after a little practice you will find that a narrow strip of printing paper cut from a larger piece will suffice.

Expose the strip in a number of steps, doubling up the exposure each time. Take, for example, a series of exposures such as 2, 4, 8 and 16 seconds. An easy way of doing this is to expose the whole strip first of all for two seconds. Now cover one quarter of the strip with a piece of thick cardboard. Turn on your exposing light again and expose the uncovered threequarters for another two seconds. Move the cardboard up so that it now covers half the paper and expose for four seconds. Finally, move the card so that threequarters is covered and expose the last quarter of the paper for eight seconds. The strip has now received a series of different exposures—namely 2, 4, 8 and 16 seconds.

SPECIALLY FOR PHOTOGRAPHERS

Our illustration this month shows a print which has been exposed in this way. The third strip, namely eight seconds, looks best and was chosen as the right exposure for the final print.

The actual times given are, of course, examples only, and you must work out for yourself the most suitable times for your own equipment.

After exposure, test strips or correctly exposed sheets of paper are placed in the developer. Make sure that the developer covers the print completely, and move it about gently either by rocking the dish or by using the print tongs.

Development of contact papers takes about one minute. After development pick up the print with the tongs, by its edge, to avoid scratching its surface and transfer it to the rinse bath. Now, using your second pair of tongs, transfer the print to the fixing bath. Leave the print to fix for five to ten minutes but during that time move it about in the dish from time to time. Later, prints should be transferred to the sink and washed in running water for at least threequarters of an hour. For drying, they can be placed face upwards on a clean towel.

Contact printing paper is usually available in three grades—soft, normal and hard. Which kind to use depends on your negatives. A thin, under-exposed negative needs a hard paper. A nicely exposed negative, full of detail, will give best results with a normal paper, whereas the dense, contrasty negative often gives a surprisingly good print when soft paper is used.

* * * *

Finally, here are some further points to be borne in mind by photographic printers. **Do** adopt a routine and stick to it. Keep dishes, for instance, in the same order always. Keep printing paper well wrapped up in its light-proof paper, taking out only one sheet at a time. **Do** follow instructions on the packet very carefully when making up developer, fixer, etc. **Do** keep your developer temperature about 20°C (68°F).

Don't let fixer get into your developer, so **do** use separate tongs in developer and fixer dishes. Above all, **do** remember to clean up very carefully after each printing session.

Next month: Developing your own films.

Transport Museum for Lincoln?—

(*Continued from previous page*)

Although two members generously offered to donate £200 each for an acre of ground, planning permission was not granted as the site is outside the scheduled Planning Area. However, it appears likely that by the end of 1962 the society will have managed to purchase some suitable ground for their museum project.

Two of the society's buses—a 1927 PLSC "Lion" KW 474 and a 1930 L.T.1 "Lion" TF 818—spent part of their life in Jersey in the fleet of J.M.T., as Nos. 3 (J 6825) and 2 (J 4299) respectively. At the end of January this year the society acquired a very unusual brand of Leyland—a 1930 "Badger" normal control single decker, registered KW 7604.

If you want to see any of these vehicles you will be able to do so at the Lincolnshire Agricultural Show on June 20–21, and at the Spilsby Agricultural Show on July 21, where they will be on display. I hope that some *M.M.* readers in the East Midlands area will be sufficiently interested to contact Mr. LeTall at 137 Doddington Road, Lincoln, for further details.

A Rail Trip on The "Sou' West"—

(*Continued from page 139*)

but on a much higher level, as far as Sanquhar. Beyond Upper Cairn is a "table land" of some seven miles—and a set of water troughs—before the line falls almost continually to Kilmarnock.

Main items of interest now are the massive Templand Viaduct of fourteen grey masonry arches near Old Cumnock, and that at Ballochmyle over the River Ayr near Mauchline. The centre arch of Ballochmyle Viaduct has a 181 ft. semi-circular span, and is 163 feet high. Beyond Mauchline Station is Mossgiel Tunnel, 683 yards long, following which is a five and a half mile fall at 1 in 99–100 to Hurlford, near Kilmarnock.

The original route to Glasgow was via Dalry (where the Ayr line was joined) and Paisley, but later a more direct route was constructed via Barrhead, reducing the distance by almost ten miles. This saving in distance, however, was achieved only by the inclusion of steep gradients, but once over Dunlop Summit the run down through Neilston Pass is easy, with the gradients falling gently from that point into the city. In the up direction pilots are frequently provided from Glasgow to Kilmarnock.

Just over half a mile from St. Enoch, at Gorbals Junction, we rejoin the route from Paisley and cautiously negotiate the sharp curve leading to the terminus. In our trip of a little over 250 miles this short distance between St. Enoch Station and Gorbals Junction is the only length we have traversed in both the up and down directions.

An Extensive Liverpool Layout—

(*Continued from page 166*)

employed on this train, but since that time a West Country 4–6–2 *Dorchester* has become available to share in the work.

An interesting formation is that known as the "Night Train", consisting of three Hornby-Dublo Sleeping Cars and two Passenger Brake Vans, one at each end of the formation. This important overnight sleeper is just the job for the new *City of Liverpool* Locomotive, an imposing engine in its fine maroon livery.

For the shorter-distance and suburban workings the favourite type of locomotive is the 2–6–4 Tank, several of these being in use. When these extensive train services are borne in mind it is not surprising to learn that there are nearly 70 Coaches of various types. Freight stock is numerous and varied, the total of goods vehicles numbering more than 300.

Making Easter Eggs—

(*Continued from page 145*)

Although Easter eggs have a very long ancestry, in their modern chocolate, or cardboard, form they do not seem to have been known earlier than the mid-nineteenth century. In 1874 the *Illustrated London News* noted their growing popularity, and from about this time until the death of King Edward VII, in 1910, paste eggs were so greatly improved and developed that very elaborate chocolate examples were quite a common sight in the shops at Easter, especially in big cities such as London, Liverpool and Manchester.

Speaking of handsome Easter eggs reminds me that at the beginning of the present century a Latin–American millionaire presented a really magnificent sample to the beautiful young woman to whom he was engaged. Placed on its side, the egg was more than six feet in height and measured eighteen feet from end to end. Inside was half a ton of chocolates and sweets, an entire trousseau—including a number of rich furs—and all kinds of beautiful wedding presents made of silver. No wonder this luxurious gift required half-a-dozen men to deliver it to the delighted bride-to-be.

The chocolate factory which fashioned the casing was certainly set a difficult problem in having to create a paste shell of such huge dimensions, able to contain so great a weight without cracking. It is, in fact, reported that they failed twice before they brought their singular experiment to a successful conclusion.

Air News—(*Continued from page 147*)

it carries much of the equipment and many of the weapons fitted to Grumman's Tracker carrier-based anti-submarine patrol-bomber.

Search radar is mounted inside a large nose radome and there is a retractable M.A.D. tail-sting for detecting submerged boats. Electronic countermeasure devices are carried at the wingtips, sonobuoys are stowed in the rear fuselage and depth charges in the centre fuselage. A search-light is fitted under the starboard wing and there are four underwing attachments for torpedoes, rockets, depth charges or extra fuel tanks.

A HUNDRED YEARS ON

One hundred years ago the American Civil War was being fought by soldiers like the blue-coated infantryman seen in the picture on page 147. Among the weapons used was the revolutionary Gatling gun, which you see by his side. This had ten revolving barrels which could be cranked round to produce a rate of fire far greater than other guns of its time.

The modern counterparts of both soldier and gun are seen on the right of the picture, in the shape of a pressure-suited fighter pilot and the Vulcan 20-mm. cannon that is fitted in the Lockheed F–104 Starfighter and other U.S. warplanes. Like the Gatling, the Vulcan has revolving barrels, but in this case they are turned electrically and can fling out shells at the rate of 6,000 a minute.

Stamp Gossip—(*Continued from page 171*)

was how far would such a sum go? Well, if my correspondent went in for the old classics I am afraid it would not go very far, but if a collection of "QE" stamps, to a face value of, say, 1/– is the target then, as time goes on, something very much worthwhile will be gradually formed.

My word, what fun such a collection will yield, if my correspondent really takes pains and does not just heedlessly (as I am afraid a lot of people do) stick the stamps in an album and forget them once they are mounted. A good loose leaf album can be bought for around 25/–, and, as I have often remarked, it is amazing how soon, with practice, one can learn to hand print neatly (for headings, etc.). One young collector wondered what he should put at the heading, in addition to the name of the country, and I suggested he should copy the headings in the Commonwealth "QE" Catalogue. With the 10/– a month, about 30 sets up to the 1/– value can be bought in a year, making a very nice little collection. Well, that's the advice I gave to my correspondent, as I have to others, and I am passing it on for the consideration of many who may like to take up stamps in a worthwhile way, without spending too much on the hobby.

TIP OF THE MONTH

I remarked earlier in these Notes how modest the face value is of British Colonial special issues, and from the point of view of attractive stamps, with real possibilities, I do not think any stamps being issued today stand a better chance than these of at least providing you with your cake after eating it—if you see what I mean.

Solar Power for Earth and Space—

(*Continued from page 150*)

10 degrees west of south so as to catch as much of the afternoon sunshine as possible. Mounted in a cedar wood frame, the collector is made of a copper plate which has water tubes formed in it so that as water circulates through the collector it is heated by the rays of the sun. So as to absorb as much heat as possible, the front of the copper plate is painted matt black. Between this plate and a thick glass cover is a three-inch air space which helps to prevent heat losses. Overall, the collector has a length of 34 feet and a width of 16 feet.

The difficulty with using the sun for heating is keeping the house warm on dull days and, of course, at night. Some way has to be found to even out the noonday heat and the cold of the night. In solar heating this is done by heating up a large tank of water—as well as the house itself—when the sun is shining. At night and during dull days heat is drawn off from this tank of water to warm the house.

During the hot summer weather, cooling is required instead of heating. The solar collector is cut off and, by the use of a device known as a heat-pump, the heating system is adapted for cooling.

Out in space, however, there are no clouds to cut off the sun's heat. That is why solar heating may provide heat and power for the space stations of the future.

Dinky Toys News—

(*Continued from page 155*).
page 154 of the splendid Muir Hill 2-WL Loader (Dinky Toys No. 437), which came into the shops earlier this year. Regular readers of my Notes will, perhaps, remember that in February I confessed to a strong liking for this miniature, and I have taken the opportunity this month of including the picture referred to mainly because it shows the model in such superb detail. The splendid little "engine" is so realistic you almost expect to be able to press a button and see it start!

Hornby Railway Company—

(*Continued from page 164*)
real thing. Ironwork and door details are beautifully modelled and the ends represent the corrugated pressed metal ends of the real vans. An interesting detail is the blank section in the upper part of the corrugations, where the ventilator would be situated in a standard ventilated van. Apart from its construction, the Van is readily distinguished from others in similar livery by the display, towards the left-hand end of each side, of a large yellow disc, together with the word *Banana*.

The body is mounted on a Hornby-Dublo standard underframe of recent design that includes a reproduction of the brake cylinder, and it has what miniature railway enthusiasts frequently call slotted-out brake gear, the individual rods and members standing out clearly and not being merely modelled in relief. The roof, finished in B.R. grey, is moulded separately from the bodywork and the vehicle runs on moulded wheels of disc pattern.

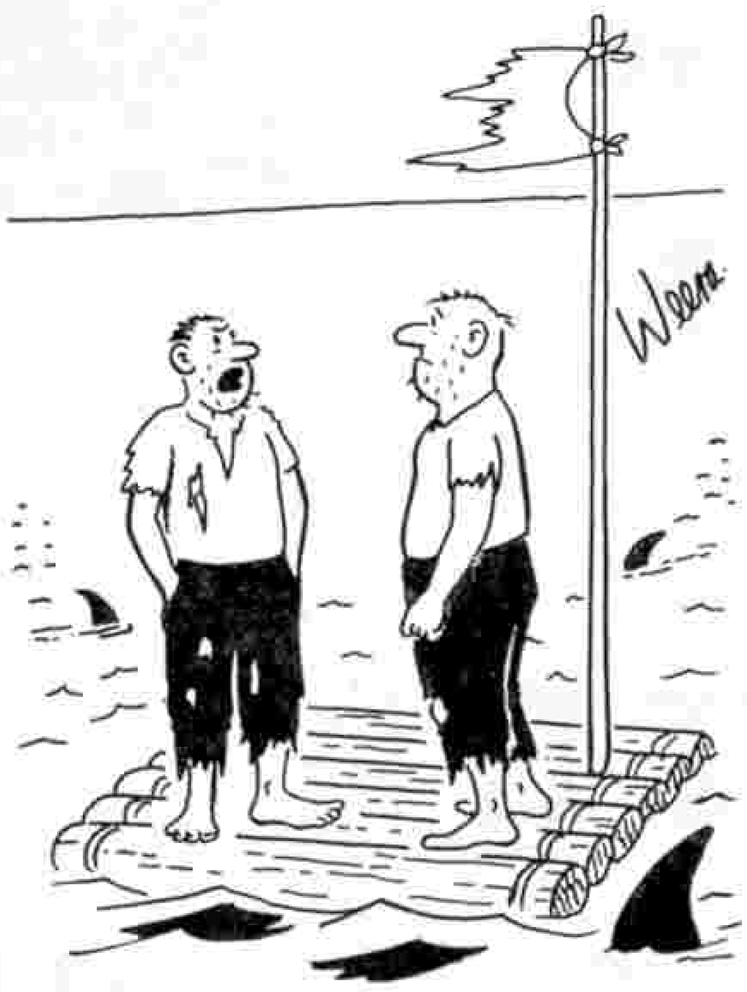
For many years the railways in this country have maintained a somewhat special type of vehicle, usually known as a gunpowder van, for the carriage of explosives and similar traffic. In view of the often dangerous nature of its contents the gunpowder van has stoutly-constructed metal bodywork and the general aspect of this type of vehicle over the years has changed but little. Of course, details in line with current practice have been applied to the vans most recently constructed, in regard to materials, axleboxes, brake gear and so on, but viewed in a general sense the type remains what we may regard as a standard "iron van".

The Hornby-Dublo Gunpowder Van has the traditional squat appearance and does actually carry the wording *Gunpowder* —a somewhat primitive but perhaps less frightening designation than others one might think of. No special livery is employed, but the detail and characteristic design, so well reproduced in the Hornby-Dublo version, ensure that the Van shows up prominently in almost any assembly of miniature rolling stock.

The sides and ends carry representations of the tee-section members that brace the bodywork of the real thing. As is usual with Hornby-Dublo moulded bodywork, the door details are particularly satisfying and the shape of the roof follows the familiar "iron van" tradition.

"He always has to run for his train. I wouldn't mind, only he's the driver!"

Fireside Fun



"No, I'm not in the mood for a sing song!"

The twins, who had just celebrated their 95th birthday, were the wonder of the village.

"And to what do they attribute their age?" a newcomer asked.

"One to the fact that he's an early riser, and the other to the fact that he isn't," came the reply.

Tommy had been absent from school for several days, and returned with a heavy scarf round his throat. To teacher, he presented a note which said: "Please do not let Tommy learn any more French. His throat is so sore he can hardly speak English."

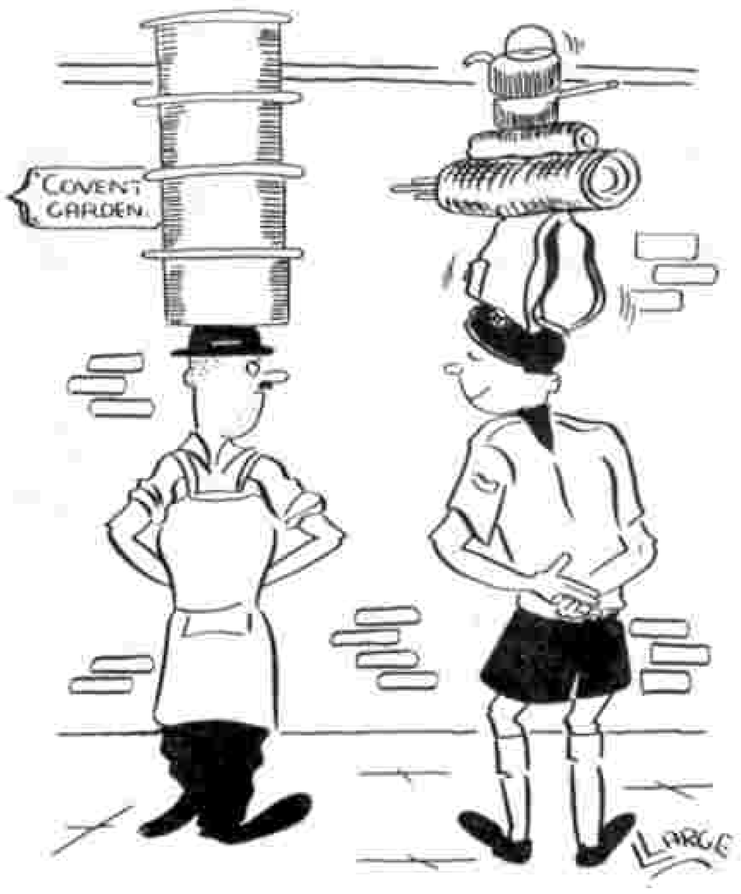
* * * *

The little girl looked up from her lesson-book. "What is a pedestrian, daddy?" she asked.

The long-suffering and experienced father sighed as he replied. "A pedestrian, my dear, is a man with a wife, a son, two daughters and one car."

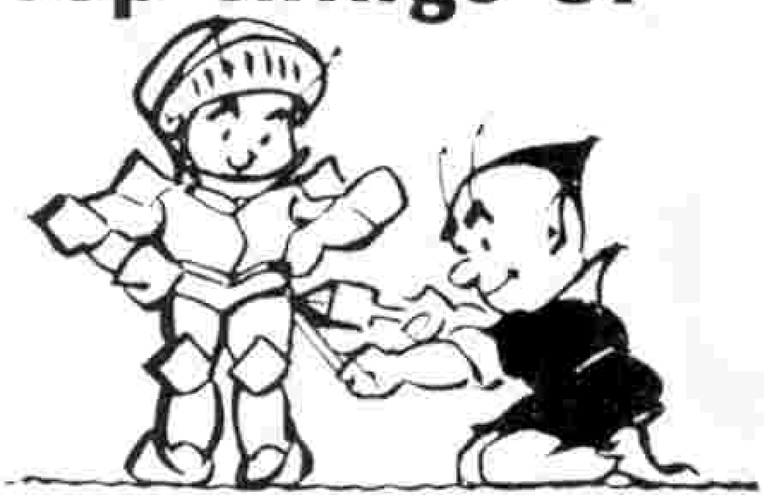
* * * *

A little boy who went to the ballet for the first time with his father watched the girls dance around on their toes and then asked, "Why don't they just get taller girls?"



WHETHER YOU SOLDER to-

(a) keep things UP



(b) keep things DOWN

(c) keep things RUNNING

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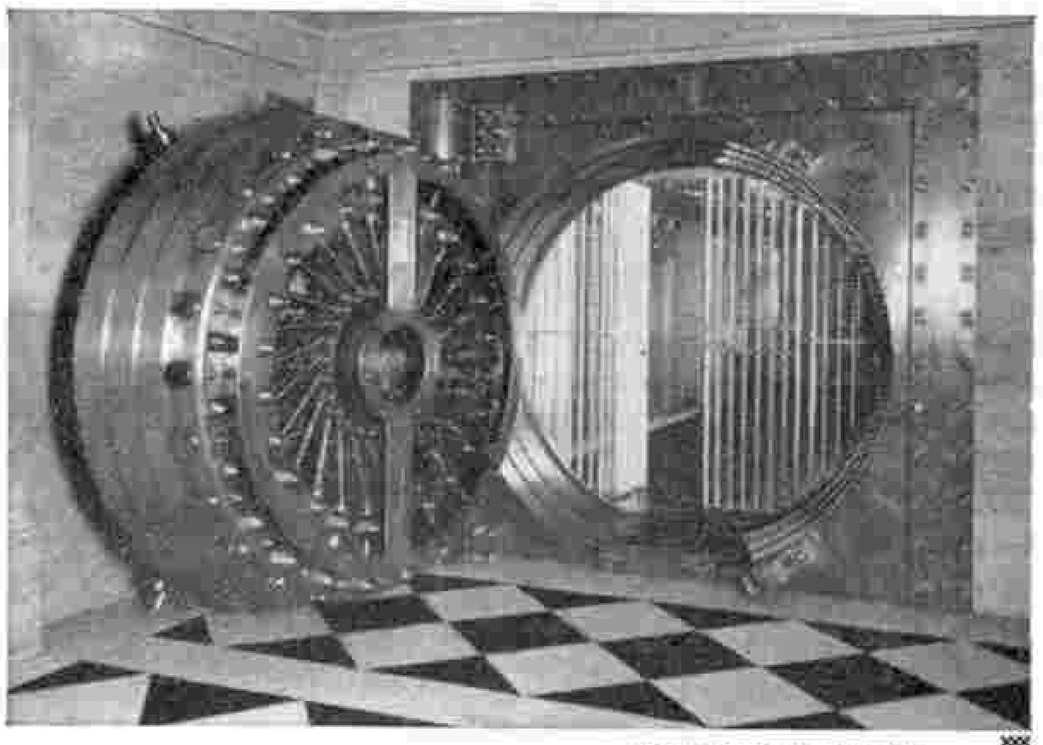

Photo: Midland Bank Ltd.

Open Sesame! When Ali Baba shouted the magic password "Open Sesame" a great boulder moved aside, revealing the glittering treasure cave of the Forty Thieves.

Most treasures today are kept in Safe Deposits, behind enormous metal doors. The one in this picture weighs as much as five London buses—yet one man can open it quite easily. Even more remarkable are some restaurant doors which you open simply by walking through a beam of light. You do not touch anything. You do not even need Ali Baba's magic password!

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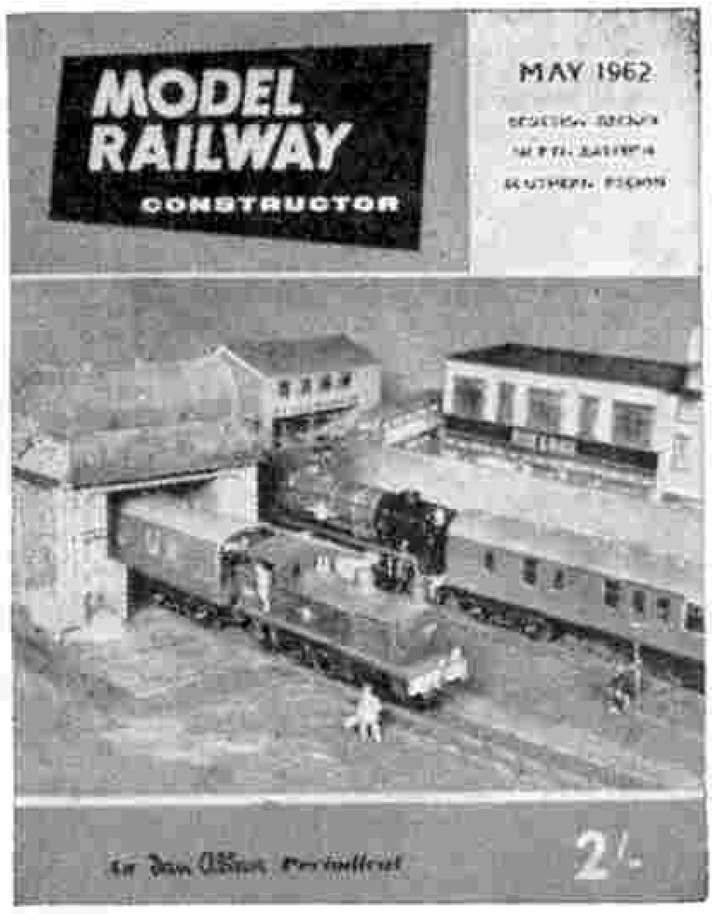

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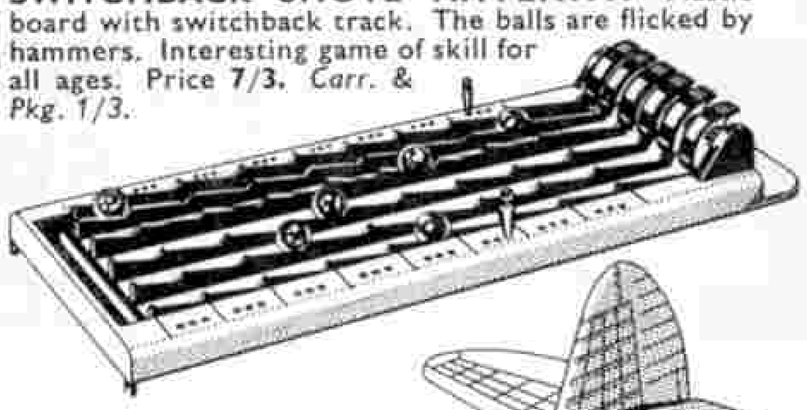

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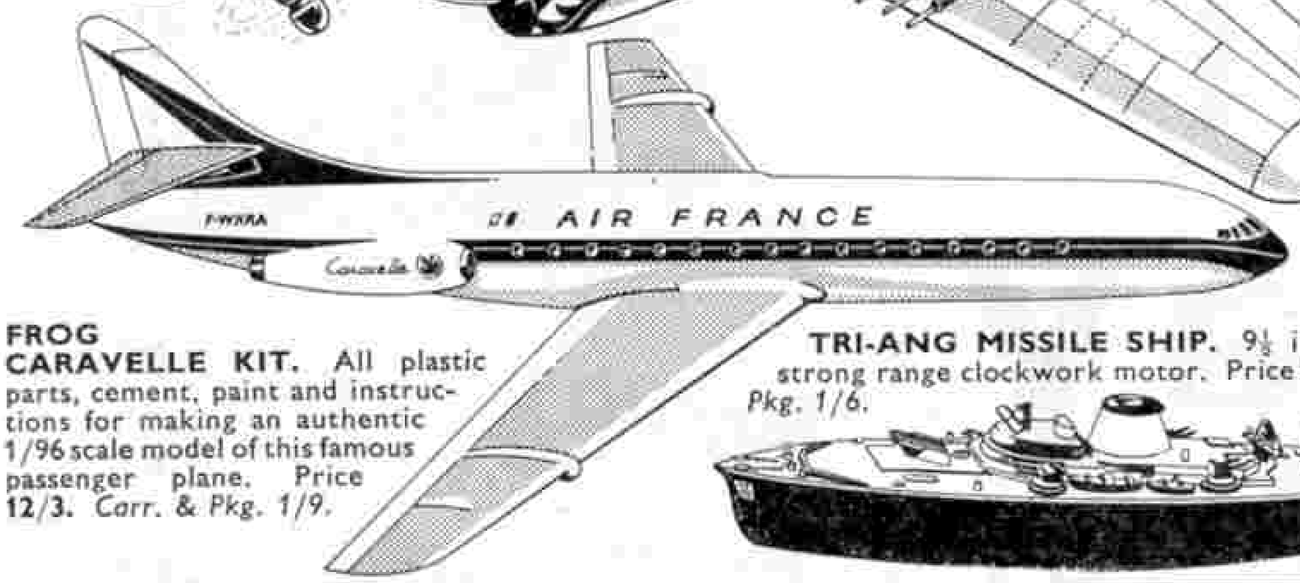

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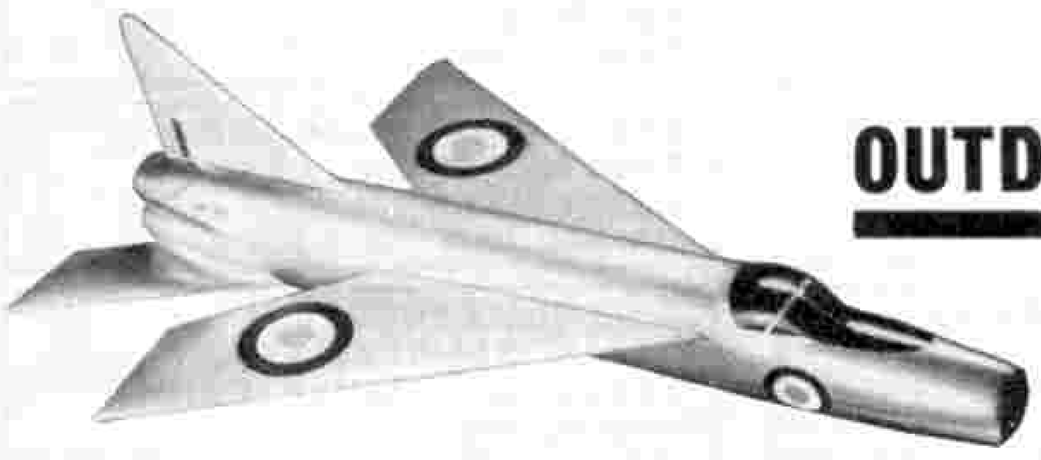

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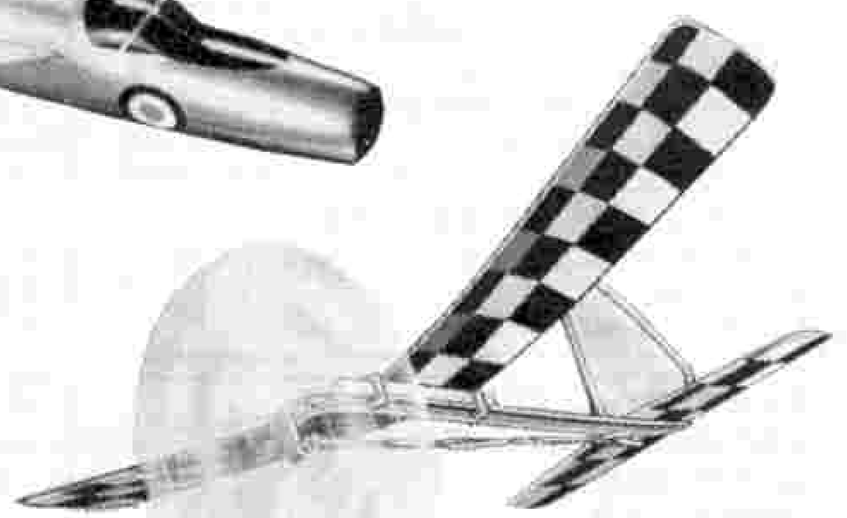

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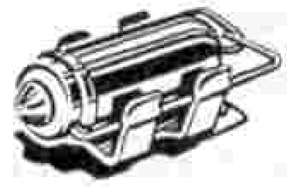

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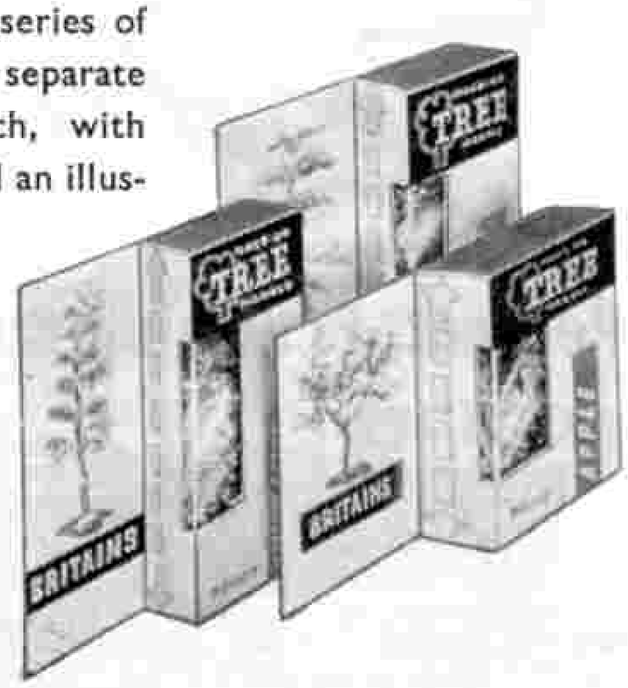

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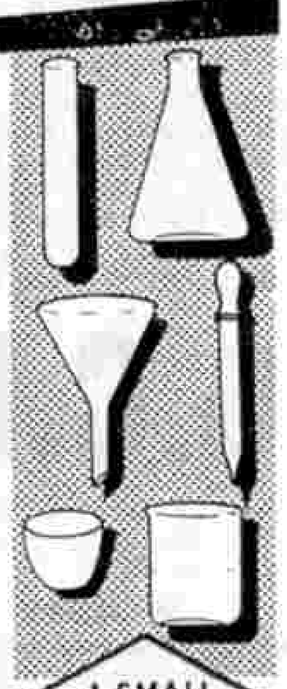

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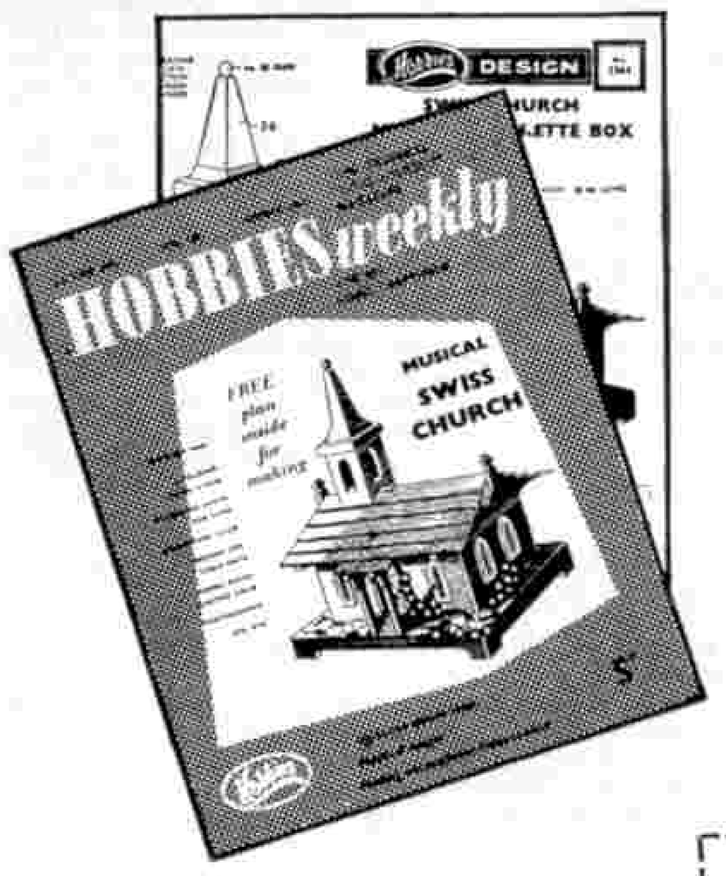

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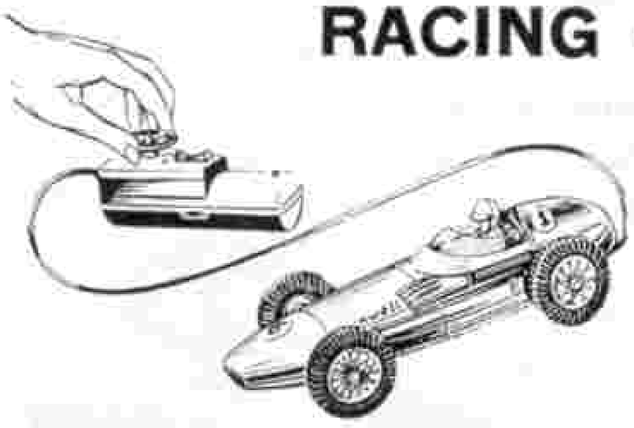

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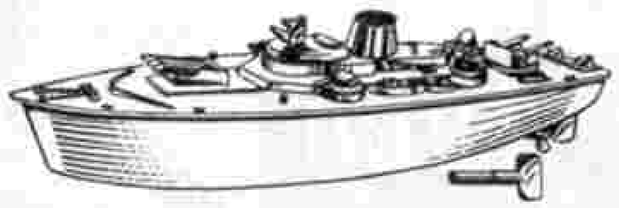

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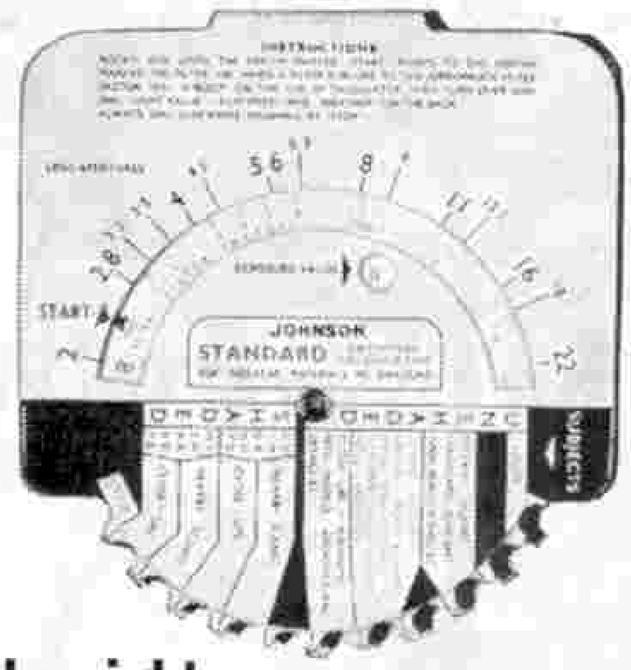

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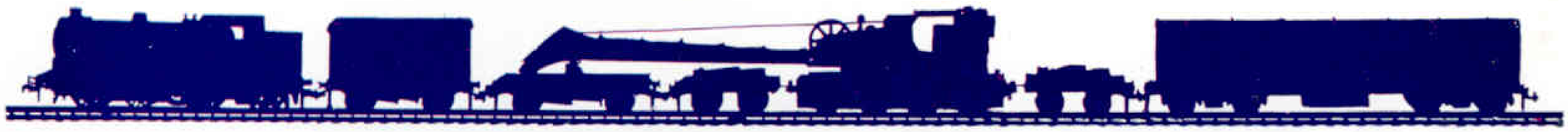

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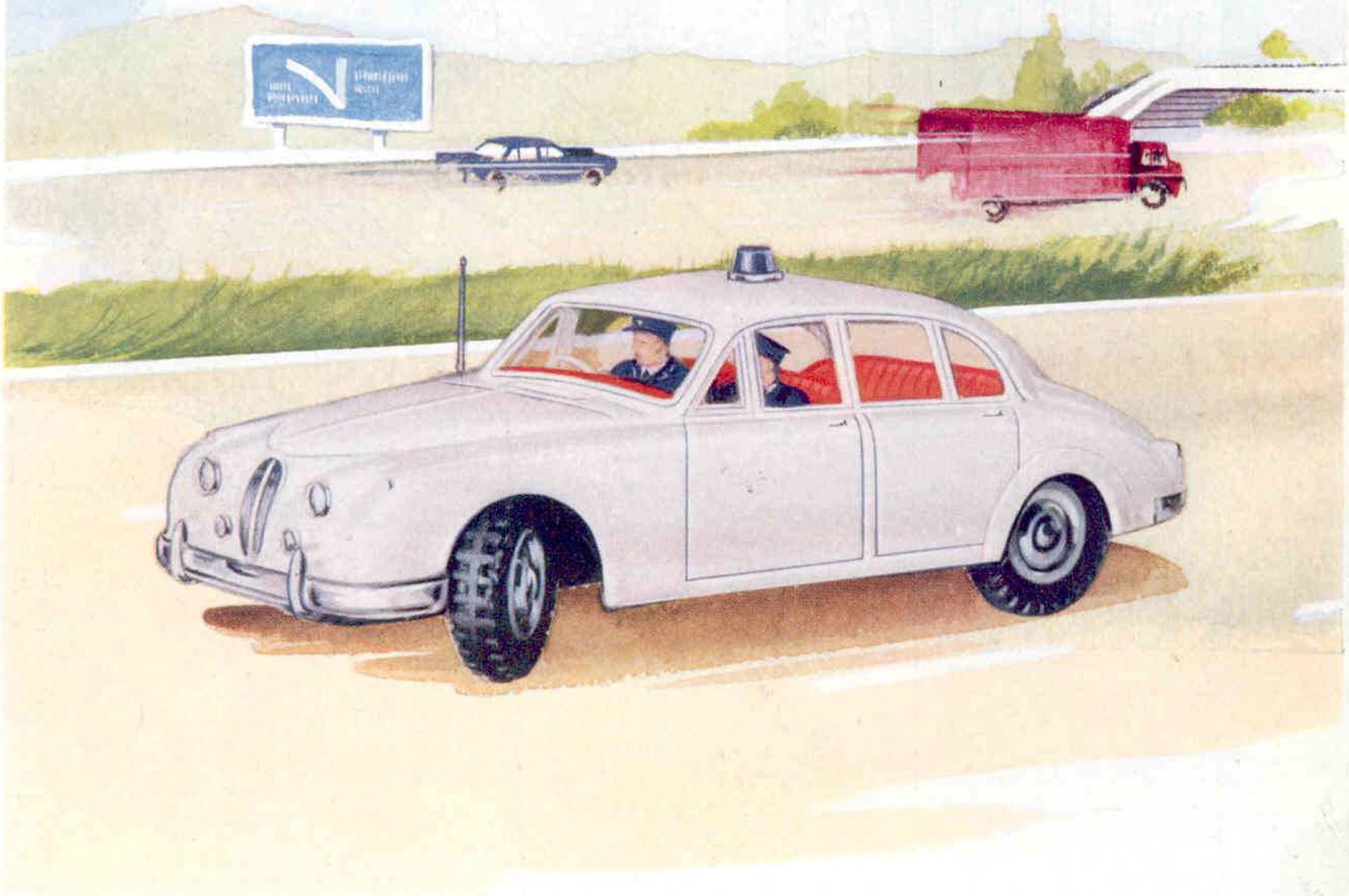

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